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The Origin
OF THE
ANGINAL SYNDROME.

A Paper read at the Opening of a Discussion of the Harveian Society on Dec. 8th, 1921,

BY SIR CHARLTON BRISCOE, BART.,
M.D., F.R.C.P. LOND.,
PHYSICIAN TO KING'S COLLEGE HOSPITAL.

THERE are probably few subjects in medicine which have given rise to more discussion than the pathology of angina pectoris. In such discussions explanation of the mechanism of the pain has always been to the fore; on this particular point of the syndrome (as it occurs in some cases) I purpose to submit some evidence which I believe has not before been produced. Angina pectoris is generally supposed to spring from some event taking place in the heart or aorta; the pain certainly arises in the neighbourhood of the heart and the fully developed attack is notorious as a cause of sudden death.

DEFICIENCIES OF PRESENT KNOWLEDGE.

Yet in spite of long recognition as a clinical entity, in spite of much skilled investigation, the exact cause of these overwhelming outbursts of pain remains uncertain, and we have come to realise the following deficiencies in our knowledge:—

(1) *In Anatomy and Physiology.*—From anatomy we ask the demonstration of afferent fibres to carry pain sensations from the heart, their course, connexions, and termination; from physiology, the function and method of expression of these fibres. Neither branch of science can fully supply the required information. We know that afferent fibres do come from the heart—most, perhaps, passing up by the depressor fibres of the vagus, some to the stellate ganglion, but of the subsequent course of these to and in the cord nothing certain is known. Physiology is indefinite regarding the sensation of pain arising in internal viscera. The current view is that all visceral pain is due to tension (Hurst); knowledge of its external expression is based mainly upon the researches of Dr. Henry Head and may be briefly expressed as follows: The distribution of pain caused by irritation of an internal viscus corresponds with that of a segment or segments of the spinal cord. The internal viscus itself, in this case the heart, has largely lost the capacity to produce sensations directly appreciated by the individual, but afferent impulses pass up from it to a segment or segments of the spinal cord. There they may be said to jangle their neighbours connected to somatic structures, making them hypersensitive, and so producing sensations appreciated in consciousness in the field of distribution of these somatic nerves. Thus various sensations, of which pain is the most prominent, are appreciated by the individual, not in the viscus actually at fault, but in the skin, muscle, subcutaneous tissue, and bone innervated from the same spinal segment. The somatic representation of the various segments of the cord has been systematised mainly through the work of Head and these distributions are generally accepted. A later part of Head's work consisted in correlating certain somatic areas with hypersensitiveness arising from irritation of certain viscera. Finding that the areas of pain in angina pectoris and certain cardiac conditions occurred in the somatic areas of certain segments, Head deduced that the heart was connected to nerve cells in these segments. They are principally dorsal. This deduction has the disadvantage that it is a physiological conception based upon a clinical condition of doubtful pathology; further, in this connexion it is important to remember a phylogenetic consideration—namely, that the heart was originally developed in spinal segments higher than the dorsal, that it migrated caudalward and therefore that somatic areas of referred pain, to correspond with the heart, should be cervical rather than dorsal.

(2) *In Pathology.*—We cannot yet point with certainty to any lesion which can be indicated as a cause of angina. It is possible to argue both for and against aortitis or coronary sclerosis. Most significant in this respect are the theories of functional spasm, cramp of the heart and the like, as indications of a beggared pathology.

(3) *From the Clinical Aspect of Heart Disease.*—Perhaps the most striking fact is the comparative rarity of pain in heart affections, leading to the thought that the heart must be a comparatively insensitive organ. In respect of angina, however, we have a clear-cut picture of the fully developed attack, and we also know a similar condition described as hysterical. More frequent than these, however, are cases fitting neither of them. The true fully developed angina and the so-called false angina are but the extremes of a very large class, the bulk of which in the present state of our knowledge lies intermediately, and causes us great trouble in diagnosis and prognosis.

To sum up our ignorance of angina pectoris, anatomically, we know merely that sensory end-organs do exist in, and afferent fibres do pass from, the heart and aorta; physiologically, we have a conception of heart sensation resting upon a rather insecure foundation; pathologically, we have no certain base to build on; and clinically, we have to deal with a number of ill-defined cases. We lack the knowledge which would enable us to docket the latter.

ANGINA AND STRESS OF SOME RESPIRATORY MUSCLES.

In following up some work concerned with the mechanism of lung expansion, the results of which I brought forward in one of the Arris and Gale Lectures in 1919, I have been constantly testing the action of accessory muscles concerned in respiration. I did not set out to study angina pectoris, but in testing these muscles came upon some facts which compelled my attention in that direction. Briefly put, and before entering into details, what I found was as follows. Some of these accessory muscles varied very much in intensity of action and stress in different positions of the body, and in different circumstances. When under stress these muscles became tender, and—and this is where my thoughts were forced towards angina,—when pressure was made upon these tender muscles the pain produced was not always a mere local sensation, but was referred to wide areas very similar to those concerned in angina. Next I found that in some cases which had suffered from anginal type of pain, pressure on certain of these muscles produced pain like that of the attack, and finally in some cases of angina relief of tension in these muscles was followed by cessation of pain.

Various as are the exciting causes of an attack of angina, they are such as would affect the respiratory apparatus (particularly in the upper part) as much as the cardiovascular. In many cases there are warning sensations referred by the individual to something occurring in the neighbourhood of, and posterior to, the sternum. These warnings generally occur under circumstances of physical strain, and if neglected are followed by an attack, or the attack may come on suddenly during exertion. In both these types there is respiratory stress in which, as in dyspnœa generally, an excessive part is played by elevation of the thorax. An attack may be precipitated by a large meal, when the diaphragm, hindered in action by a distended stomach, throws more work on the upper respiratory muscles, or by emotion, when the same upper thoracic respiratory stress occurs. Finally, attacks frequently come on for no apparent reason when the patient is resting in bed at night. These are difficult to explain on a cardiac basis, but, though not well recognised, it is a fact that the supine posture tends to quiescence of the lower thoracic and abdominal respiratory mechanism at the expense, and consequently with overwork, of the upper thoracic mechanism. An extreme instance of this is seen in the

deflation of the lower lobes of the lung, not infrequently seen in cases compelled to complete recumbency following operations and otherwise.

In these conditions, and indeed in dyspnœa generally, stress falls in particular upon those muscles which are active when inspiration consists largely in elevation of the thorax.

STRESS OF SKELETAL MUSCLES.

Quite apart from respiratory muscles, skeletal muscles become hypersensitive when over-stressed or chronically fatigued, and further, pain is referred over a wide area. In three cases of occupation-neurosis resulting from over-use of the arm or mal-position in the use of the hand, I have found the trapezius muscle to be tender to pressure. The pain arising from this muscle is appreciated either at the back of the occiput as high as the occipital ridge, as far back as the middle line and as far forward as the mastoid process, or in addition as extending upwards in front of the ear, through a narrow area over the cheek as high as the zygoma. Here an area a little smaller than a hemi-section of a tennis-ball is appreciated as being the seat of "neuralgia." In two instances this same area became considerably reddened as the result of vascular dilatation. The pain was recognised as having been appreciated before and was induced by the use of the arm. In two cases the muscles lying between the metacarpal bones of the thumb and index fingers, probably part of the adductor pollicis, were hypersensitive, the pain being referred over an area triangular in shape, its base limited below by the level of the wrist-joint both anteriorly and posteriorly, and ascending to an apex over the middle part of the forearm on its radial border. In cases of acute flat-foot pain may also be produced in the leg. In one instance such a pain was felt over an oval area on the outer part of the thigh extending from a point just above the external condyle of the femur as far as the great trochanter. In other cases the pain has been appreciated either in the inner or outer side of the leg between the knee and the ankle and in well-defined areas. The pains in these cases have been recognised by the individuals as occurring previously. It will be noticed that I am not claiming any specific property on behalf of the respiratory muscles.

The method I have adopted in testing these muscles is first to pick up the skin between the finger and thumb and apply gentle pressure, secondly to take hold of the muscle, or to locate the muscle with the finger, and apply similar pressure; if pain is absent on the first occasion and present on the second I conclude it is due to the muscle itself, though it is not possible definitely to exclude the subjacent tissue. That the muscle is the cause of the pain is most probable when it is remembered that putting that muscle into action by the individual produces similar pain to that which follows pressure.

On producing the pain by pressure, the subject generally indicates the area of pain with a wide movement of one hand. He is then asked to indicate it more exactly, and will usually show an area less than that originally indicated. Various points in the neighbourhood of the margin of the area are then indicated and the question asked, "Do you feel it here?" and by this means the area in which the pain is appreciated can be more or less accurately differentiated. In some cases the method employed by Head has been adopted for testing different areas, and the maximum points of pain are found to correspond to those which he has published. In such cases the pain has usually been of great intensity. Patients cannot always be examined during such paroxysms, nor do they appreciate prolonged handling of a muscle which produces pain of such severity.

DEGREES OF PAIN.

In respect of degrees of pain felt in these muscles, for all practical purposes, the following categories may be differentiated: (1) All structures in the segments are locally tender and produce referred pain; (2) the skin is not tender, but the remaining structures, both bone and muscle, are hypersensitive and refer pain; (3) the skin and bone are not tender to pressure—the muscle is tender and produces the referred pain; (4) the muscle alone is locally tender—i.e., "the pain is under your finger," and either produces no referred pain or such an area is diminished in extent.

The muscle which has been tender either with referred or local pain will lose such sensitiveness in time and pain will not be elicited on pressure such as has been employed previously. It may disappear in a few hours, occasionally in a few minutes, and commonly in less than 12 hours. On the other hand, the sensitiveness may remain for days or even weeks. In the case of a lady who had suffered pain for two years, in whom the trapezius was put at rest by means of a sling, the muscle remained locally tender for three weeks but was not tender at the end of six weeks. The hypersensitiveness re-developed in an hour when the sling was left off and the muscle was again brought into action.

AREAS TO WHICH PAIN IS REFERRED BY MUSCLES ACTIVE IN UPPER THORACIC RESPIRATION.

Returning to the respiratory muscles, I find the following areas, generally on the left side, occasionally on the right, frequently indicated as being the site of pain when pressure is applied to a tender muscle:—

(1) The inner arm, upper and lower, extending over the areas allocated to the first, second, and third dorsal segments.

(2) Other parts of the arm or hand not always corresponding to a segment. The thumb has in my series not been affected. To distinguish from the first area this may be called the outer-arm area.

(3) Anterior axillary area extending from a line somewhat external to the nipple as far as the free margin of the anterior axillary fold. Above, it extends to the level of the first rib, sometimes higher, to a point over the coracoid process. Below, less definitely to the level of the fifth or sixth rib.

(4) An area in the shape of the brim of a cocked hat placed over the apex of the shoulder.

(5) An area extending from the occipital ridge with an indefinite lower border well down the neck. Bounded by the middle line internally its anterior limit is a line dropped from the mastoid process towards the acromion.

(6) A central "sternal" area limited to the homolateral part of the sternum and adjacent costal cartilages. It may extend upwards to include the anterior triangle of the neck and grip the throat.

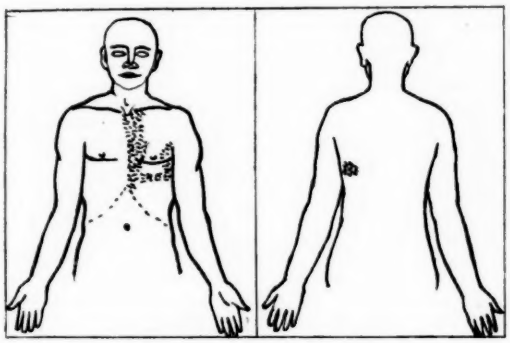
The extent of these areas varies at different times and in the same or different individuals. Usually, the upper border is more sharply defined than the lower. Other areas are occasionally and irregularly the site of the pain produced.

Time does not permit me to enter fully into the muscular mechanism of respiration. After studying this subject for several years I must confess it is most complicated. It may, however, be safely stated that whenever the influence of effort enters into respiration—be it from exertion, emotion, pain, cardiac defects, or what not—there is an increase in the depth of inspiration, in which elevation of the thorax plays an excessive part. As I mentioned before, the same may happen when the supine posture is adopted.

The muscles principally concerned in this are the scalenes and upper intercostals in inspiration, and the triangularis sterni in expiration. The three scalene muscles which rise from the transverse processes, the anticus and medius being inserted into the first rib, and the posticus into the second rib, form—together with the intercostal muscles of the first space—the motor mechanism of a unit of expansion for the upper part of the thorax. This consists in the manubrium sterni, the vertebræ, the first two ribs, and Sibson's fascia. The third and fourth ribs are much less firmly attached to the sternum than the first and second. With the intercostal muscles attached to them they provide a link between the upper and lower part of the thorax.

Action of the Scalenes.—Ordinarily the anterior scalene alone acts in inspiration, as can be easily demonstrated. In dyspnœa, when the upper thorax is markedly elevated, all the scalenes not only act forcibly in inspiration, but do not relax until the expiratory phase is half completed. In fact, in dyspnœa they work considerably over time. With the thorax

FIG. 1.



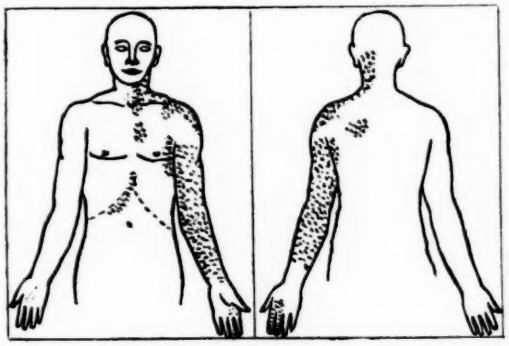
Left triangularis sterni: 14 cases.

becoming rigid the scalenes perform the whole work of elevation of the thoracic cage.

Intercostal Muscles.—These muscles frequently contract in both phases of respiration. In the upper spaces the inspiratory contraction is certainly greater than the expiratory.

Triangularis Sterni.—This muscle arises from an inconstant area on the back of the sternum and xiphisternum and is inserted into a varying number of ribs, extending in some cases as high as the first or second rib, and fairly constantly into the third, fourth, fifth, and sixth. The lower fasciculus of this muscle extends horizontally outwards, being inserted into the fifth or sixth rib and cartilage. In such individuals as present a broad epigastric angle, the action of this muscle can be estimated by inserting the tip of the little finger between the xiphisternum and the costal margin. By this means it can be detected

FIG. 2.



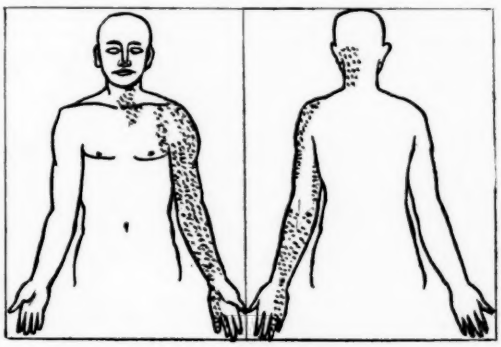
First left intercostal space: 13 cases.

that this fasciculus is purely expiratory in those individuals in whom respiration is largely produced by thoracic elevation. The converse is true, it is inspiratory in those who adopt the lower thoracic abdominal type of breathing, and in the average individual it is active both in inspiration and expiration.

Under various circumstances, these muscles tend to become tender to pressure. It is certain that they may be temporarily overworked under the circumstances mentioned above. When the strain is removed the tenderness disappears and they rapidly recover. Simliar tenderness producing local and referred pains not infrequently arises as the result of spasm in cases of pleurisy or pneumonia, but lasts usually not more than 48–72 hours. In some instances, however (more especially where shortness of breath is present on exertion), pain is more persistent, and cases are met where comfort has been absent for many months. In such cases local tenderness and reference of pain are more continuous. Probably general asthenic and toxic conditions predispose in both acute and chronic forms. The important factor in the more persistent ache I believe to be the ossification of ribs and cartilages. This change hinders the rotation of the ribs on their own axis. As a result the thoracic cage is elevated en masse. The scalenes are called on for greater exertion.

When the triangularis sterni is tender and pressed on the patient it indicates that the pain is felt behind the sternum. In marked cases the area indicated in Fig. 1 extends the whole way up the sternum to the lower part of the neck in the middle line, and somewhat over the adjacent costal cartilages and generally to the homolateral side. It is frequently accompanied by a sensation which causes the subject to exclaim "It goes through to my back," "It stops my breathing," "Crushes my heart," or "It is *the* pain," phrases showing that the patient recognises it as previously experienced. It was affected in 19 cases.

FIG. 3.



Left anterior scalene: 19 cases.

AREAS OF PAIN.

An intelligent patient can distinguish that the stab occurs either during inspiration or expiration. The pain of the triangularis sterni evoked when the muscle contracts most forcibly during inspiration—i.e., in lower thoracic abdominal breathing—extends outwards along the fifth or sixth spaces of the same side into and beyond the axilla, and as high as the second rib. This is a common area for pains, in women especially, and is frequently regarded as hysterical. Pressure under the left breast in the fifth space will almost certainly affect the triangularis near its insertion to the rib or cartilage.

Fifth intercostal: These are not frequently affected. In the 9 cases recorded pain was referred to the anterior axillary area in five instances, and to the middle line in four.

Fourth intercostal: These are more frequently tender. Pain was referred to the shoulder in 1; anterior axillary area, 6; occipital, 1; mid-line (sternum), 2; inner arm, 1; outer arm, 2 (11 cases).

Third intercostal (11 cases): Shoulder, 2; anterior axillary, 4; occiput, 2; sternal, 6; inner arm, 1; outer arm, 2.

Second intercostal (13 cases): Shoulder, 2; anterior axillary, 4; scalp, 1; sternal, 5; inner arm, 3; outer arm, 2.

First intercostal (18 cases): Shoulder, 4; anterior axillary, 7; occiput, 1; sternal, 4; inner arm, 5; outer arm, 2. (Fig. 2.)

Post. scalene (11 cases): Shoulder, 6; anterior axillary line, 1; occiput, 4; inner arm, 2; outer arm, 2.

Mid. scalene (5 cases): Anterior axillary, 2; sternal, 2; inner arm, 2; outer arm, 2.

Ant. scalene (21 cases): This is the most prolific muscle in referred pains. Shoulder, 7; anterior axillary, 6; occiput, 1; sternal, 6; inner arm, 9; outer arm, 6. (Fig. 3.)

In the illustrations of these areas I have, as a rule, represented the left side only as being affected in order to avoid duplication. The right side has been affected in a few cases.

These pains are not always constant for the same muscle; for instance, the anterior scalene may on one occasion refer pain to the inner side of the arm, and on a second to the shoulder, or the posterior scalene to the shoulder on one occasion and to the occiput on another. Further, in a given individual several muscles may be tender and refer pain at a given interview. The interpretation of the pain which he gives tends to vary, as has been indicated above. It is further noticeable that in the same patient on successive days different muscles may be tender; this is particularly noticeable with the intercostal spaces. For instance, on one occasion the fourth space may be tender and the higher space unaffected, whereas on a different occasion the fourth may not refer pain and be locally tender, whereas one of the higher spaces, such as the first or second, may refer pain.

There is strong evidence to show that the triangularis sterni refers pain to different areas when fatigued in expiration or in inspiration. There is also some support of a similar differentiation in the case of the anterior scalene. Possibly the spinal cord contains groups of cells in different areas which control the muscular actions for the two phases of respiration.

Thus all these muscles which become tender give referred pain in various areas outside themselves, but they share these areas in common and the composite area diagrams of any of these muscles produce a diagram which would be satisfactory for some cases of angina pectoris. These areas are: (1) Inner arm —corresponding to Head's areas 1, 2, 3 dorsal; (2) outer arm—rest of arm; thumb never seen affected; (3) anterior axillary area; (4) shoulder; (5) occiput; (6) sternal.

Two points appear to me to be important—namely: (1) If we add any intercostal or scalene areas together we get a composite area of referred pain which corresponds with that of angina pectoris; (2) that it is common for the patient to recognise the pain produced by muscle pressure as having been experienced before, as being, in fact, his particular breast pang or angina.

A CASE ILLUSTRATING RELIEF BY PRESSURE.

F. S., aged 53, was admitted to the out-patient department with extreme pain in the left arm. It commenced suddenly three weeks ago while walking, has been remittent in character since then, and is brought on by any exertion, especially by use of the left arm. The pains may occur any time during the day, but are most frequent at night. By occupation he is a labourer in regular work. He walked into the out-patient room supporting the left arm with the right, holding it tightly against the chest. His gait was slow and careful, pausing occasionally in between the paces. He sat down carefully, kept quite still, would not move his head on account of increasing the pain, and stated that his most comfortable position was on the back slightly over to the left. Movement of the elbow caused pain in that joint. A slight spasm was seen in the out-patient room during which the face went ashy grey and his eyes were filled with tears. He stood perfectly motionless. Strapping applied below the nipples relieved, but did not completely stop the paroxysm. He was admitted forthwith. The Wassermann reaction was positive. While in hospital he had many attacks and his muscle tendernesses were tested on several occasions. On one occasion, pressure on the anterior scalene precipitated a typical attack, which was relieved to some extent by amyl nitrite. During these attacks the pulse-rate was not altered. If the strapping was left off, injections of morphia had to be given. Spring tapes relieved acute attacks, but did not entirely prevent minor attacks. In particular the gnawing pain in the upper arm tended to continue, without acute exacerbations to prevent him sleeping. He was fitted out with an apparatus on the lines indicated and left the hospital on Dec. 23rd. He has been seen at out-patients' since that date. He declines to give up his apparatus. No acute attacks have occurred and the aches are now passing away. The muscle tenderness has also ceased, and he is now anxious to resume work.

IMPORTANCE AND LIMITATION OF RELIEF BY PRESSURE.

This fact of relief by pressure appears to me of critical importance. Relief to the triangularis sterni may be attained by lateral pressure as by the hands or by means of strapping, and in many cases I have carried this out with immediate relief of the pain. A piece of strapping carried round the chest at the level of the lower end of the sternum is all that is necessary. It prevents the full inspiratory action of this part and further diminishes the action of the scalenes by inducing a compensatory action of the lower thoracic respiratory mechanism. Strapping tends to stretch, is unpleasant for the patient, and produces a feeling of uneasiness owing to the inability to take a deep breath. I now employ a broad piece of webbing in which is inserted a spring. This does away with the alarm produced by complete constriction, and is a more desirable method of relief because it assists and does not replace the action of the muscle. It is effective in this condition, and frequently also relieves similar referred pains and many pains in cases where the muscles are locally tender to pressure which arise in the course of pneumonia and pleurisy.

This method of lateral thoracic pressure has its limitations. Where the ribs and cartilages are markedly ossified it may be quite impossible to produce any effect by this means, and where the respiratory apparatus, especially the lower thoracic abdominal portion, is under ordinary circumstances working at its maximum, the individual cannot tolerate any restriction whatever and his instinct will teach him that he must bear the pain rather than make more numerous respiratory efforts. The true vicious circle is therefore established. Lateral pressure produces its effect by promoting lower thoracic abdominal respiration at the expense and to the relief of the upper thoracic expansion. The characteristic attitude, if such there be, of angina pectoris is one in which the left arm is held tightly into the side and it is assumed that this posture is adopted to relieve the pain referred to the elbow. In such a case if pressure is brought to bear upon the inner side of the arm it does not relieve the referred pain. A different explanation may be offered—namely, that it is the effort of the individual, unconscious of the reason, to constrict the chest laterally, and this he can best do by folding the arms tightly across the chest. Imitation of this mechanism does, within limitations, relieve the pains and the attack very rapidly, and it is a most striking demonstration to watch the gradual disappearance of the pinched expression and agonised face which follows the gradual realisation that these pains have disappeared.

TWO OTHER ILLUSTRATIVE CASES.

F. S. J., aged 49, was brought to King's College Hospital by the police in an attack of angina. He was walking up Denmark Hill when he suddenly felt choking pains in the neck, left arm, and chest. He was in King's College Hospital in 1913 with severe anginal pains, intermittent in type and of a similar character to the present. In some of these attacks he thought he was dying. He was a sailor, but denied syphilis. His Wassermann reaction was not tested in 1913. At that time there was no evidence of organic disease. In the interim from 1913 there had been no attacks. He was seen in casualty, leaning back against a couch at an angle of about 80°, hardly breathing at all. The heart was quite steady but a loud systolic murmur was audible all over the præcordium. He had been there about half an hour; pain had ceased in the left arm but was still present in the left side of the throat and the upper sternum, radiating up and down. The face was not pale. The pain in the throat was described as gripping in character. Pressure on the first intercostal space on the left side gave no result; on the second and third spaces pain went to the left side of the neck in the region of the trachea and was identified as *the* pain. The fourth and fifth spaces referred to the axilla; the left triangularis sterni was very painful but did not radiate; the scalenes were not tested. Lateral thoracic pressure was stated to give relief, and he was accordingly strapped tightly below the nipples. This gave immediate relief, and three hours later all pains and soreness had disappeared and patient walked out wearing the strapping.

G. W., aged 46, formerly in the army, complained that for three years he had had an ache in the region of the xiphi-sternum, constant in nature, but increased by the use of the right arm, and when walking. He could walk three and half miles an hour, but this aggravated the pain and he had at intervals to sit down and rest. The pain diminished in the evening when sitting down, but woke him up in bed. During attacks he had to stand quite still; he sweated. On several occasions had thought he was dying, and on three occasions had fainted. In severe attacks pain was felt in the upper

part of the chest and extended into either arm. He was a big man. The Wassermann was negative, heart and lungs were normal, there was no albumin. Three pieces of strapping were applied round the chest at the level of the base of the sternum with intense relief; he reported in the following week that he had been at work the whole time. The pain had pulled him up three times but there had been more ease than for two or three years. On this occasion, on taking off the strapping, an anginal attack developed. He stood still, it could not be observed that he was breathing, he could not speak and had intense pain located behind the sternum. He began to sweat and his face became white. He would not move to sit on a chair which was brought; his face expressed extreme pain. The attack was relieved by amyl nitrite. An attempt was made to improve upon the strapping, but, owing to a piece of metal introduced causing cutaneous irritation, the apparatus could not be worn. The following week he reported that the pains had been severe; he had had bad nights, but no acute attacks. On this occasion (June 11th, 1919) he was re-strapped and on July 2nd, he reported again and no local pain was present. Eventually he was fitted up with a mechanical arrangement; he reported again a year later and was still wearing it, but now had a complaint of pain occurring after food with some vomiting and flatus. There had only been a few severe anginal attacks following exertion. The continuous ache had disappeared, the triangularis was hardly tender at all. A bismuth meal showed no evidence of obstruction and his symptoms of dyspepsia were relieved following the extraction of several teeth which showed pyorrhœa.

AN EXPLANATION OF THE SEQUENCE OF EVENTS IN ANGINA.

Important to my thesis is the phenomenon observed when pressure is made on the hypersensitive triangularis sterni and sometimes on an intercostal or scalene should they be tender. The chest is elevated and held there with a diminished respiratory excursion. Such elevation is carried on against the action of gravity and is produced by muscular action of the scalenes. The scalenes do not relax to the full, otherwise the chest would resume the original expiratory posture and the tracing would fall to the level upon which it stood, prior and subsequent to the pressure on the triangularis. The triangularis does contract in expiration and it is the scalenes which become tonically contracted and oppose the full action of that muscle. It is thus not difficult to conceive an explanation for the sequence of events usually found in an attack of angina. The area becoming sensitive from the stimulation of the triangularis, will account for the preliminary warnings of pain in the region of the sternum. If neglected, an increased thoracic elevation ensues, resulting in a tonic condition or spasm of the inspiratory muscles of the upper portion of the chest, producing a pain referred to the shoulder, axilla, or arm; the muscle exhibiting tone and not relaxing in expiration will produce these areas, which I believe to be associated with increased action in expiration, to the sternum or anterior triangle.

REFERRED PAIN IN VARIOUS DISEASES.

In collecting the details for this communication I find that referred areas of pain from these accessory muscles of respiration have occurred in various diseases. These observations are drawn from a series of over 50 cases, of which I think seven would be included as angina by a strict definition and a further 10 by those inclining to a wider classification. I have given short details of three cases in the first class of seven. The class including 10 cases consisted chiefly of individuals who were pulled up by pain in the chest on exertion. In most of these, attacks of pain have occurred in the characteristic anginal areas, and they had believed they were dying. Nine cases are included in a separate group, where similar symptoms were noted but where a valvular lesion was present in addition. In a fourth group of 10 cases pleurisy or pleuro-pneumonia was present in eight, and intrathoracic neoplasm in two. Asthma, emphysema, and chronic bronchitis afford another group of five. Eight cases of an anomalous type constitute a further group (and seven cases were selected from patients whose primary symptoms indicated pain arising from conditions other than respiratory stress—e.g., occupation neurosis, &c.). Such different types suggest that we are dealing with a group in which similar pains of varying severity occur. Throughout this group it seems difficult to exclude the element of respiratory stress. In some of the cases it is the essential phenomenon.

SUMMARY.

In conclusion I sumbit that—

(1) Over fatigued muscles give rise to referred pain in distant areas.

(2) The upper thoracic respiratory mechanism is excessively active under the same conditions in which attacks of angina pectoris usually occur, and stress of this nature affords a better explanation for nocturnal attacks than does cardiac strain.

(3) The respiratory muscles of this region, when hypersensitive, are the last structures in the segment to lose local tenderness and the faculty of producing referred pains by pressure.

(4) When these muscles are hypersensitive and subjected to pressure the areas to which pain is referred correspond to those similarly affected in angina pectoris, and are frequently recognised.

(5) I have demonstrated a phenomenon which offers an explanation for the warning and sequence of spread of pain in angina pectoris. This is dependent upon irritation of one of the expiratory muscles involved, and results in marked thoracic elevation.

(6) Treatment by alleviating the stress of these muscles has frequently—not always—been effective in relieving the pain *without* other treatment.

(7) Two attacks of angina pectoris have been observed as the result of irritation of respiratory muscles.

(8) I submit that the phenomena generally which accompany an attack of angina pectoris can equally well be explained on a respiratory hypothesis as on one of vascular origin.

(9) I would further point out that the age incidence of angina pectoris corresponds with that of ossification of the ribs and cartilages—a source of increased difficulty in respiration.

SPASMODIC RESPIRATORY AFFECTIONS.[1]

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SPASMODIC respiratory affections may be due to disease either of the vegetative or of the cerebrospinal nervous system. With regard to the vegetative nervous system I mention in passing the important spasmodic respiratory affection known as asthma, whose phenomena of laboured breathing consist essentially in spasm of the non-striped bronchial muscles, innervated as we now know by the dorsal motor nucleus of the vagus. In asthma the bronchial nerve centres react with abnormal violence to various blood-borne irritants, whether these be foreign proteins or bacterial toxins, also to peripheral irritants, nasal or otherwise, or even to psychical stimuli. The result is the asthmatic paroxysm, whose features are so familiar that I need not weary you by recapitulating them.

The "Hic" and the "Whoop."

Coughing, yawning, sneezing, and hiccup are all of them reflex phenomena which may be induced in healthy individuals by appropriate stimuli. Of these, hiccup calls for special mention. Hiccup is a spasmodic myoclonic contraction of the diaphragm, occurring so suddenly that the glottis is momentarily closed by suction, producing the characteristic inspiratory noise or "hic." In slight cases of hiccup the affair is transient and produces only trivial discomfort. Sometimes, however, it may become so severe and prolonged as to induce profound and even

[1] Being the concluding portion of the Purvis Oration on Respiratory Phenomena in Nervous Disease, delivered before the West Kent Medico-Chirurgical Society on Dec. 9th, 1921.

fatal exhaustion. The reflex phenomenon of hiccup is sometimes excited by transient gastric or other abdominal irritation. It may also be due to disease of the peritoneum in the region of the diaphragm, the phrenic nerve being sensory as well as motor in function. Other cases of hiccup are due to central disease of the respiratory centres in the medulla. Thus, for example, it may be produced by the toxin of epidemic encephalitis. In encephalitic hiccup the myoclonic spasms may implicate not only the diaphragm and the constrictors of the glottis, but may even extend to the muscles of the abdominal wall and trunk. Hiccup of this encephalitic type may continue for days at a time, at the rate of 12 to 15 hiccups per minute. Most cases clear up in three or four days, but others go on for weeks. Hiccup may also occur as a terminal symptom in tumours of the posterior fossa of the skull. Lastly, we sometimes meet with cases of hysterical hiccup. These are recognised by their history and concomitant phenomena, and the symptom promptly subsides under appropriate suggestive treatment.

Before dismissing the subject of cough we ought to recall whooping-cough or pertussis, an infective disease causing irritation of the coughing centres in the medulla, with its initial and terminal stages of catarrh and its paroxysms of rapidly succeeding expiratory coughs, followed by a single long-drawn inspiratory laryngeal "whoop." These paroxysms of alternate coughs and whoop follow one another in succession until the attack culminates either in temporary apnœa with cyanosis, or in vomiting.

Laryngismus, Tetanus, Rabies.

Laryngismus stridulus, especially occurring in rickety children, consists in laryngeal inspiratory stridor and is often associated with tetany or painful tonic spasms in the hands and feet. Laryngismus itself may be regarded as a tetany of the adductor muscles of the larynx.

In the classical accounts of tetanus the respiratory muscles are described as becoming implicated in the general muscular spasm, so that during a severe tetanic paroxysm not only is there opisthotonos but also tonic spasm of the respiratory and laryngeal muscles, causing asphyxia which may be fatal. I had considerable personal experience of tetanus during the Gallipoli campaign and had the opportunity of watching a number of severe cases of tetanus. Seven of my cases were fatal, but in none of them did death happen to be due to respiratory spasm or to asphyxia; what the patient died of was progressive cardiac feebleness, sometimes several days after the tetanic spasms had subsided completely.

Personally, I have never seen a case of rabies, but the symptoms are described as being of two varieties, sometimes a spasm of the inspiratory muscles, as well as of the pharynx and œsophagus, at other times a paralytic inertia of the whole respiratory apparatus, occurring either primarily or following the spasmodic attacks. The patient may die either from respiratory spasm or from syncope. On the other hand, hysterical pseudo-hydrophobia is not uncommon, and I have seen several instances of this in which the patient erroneously thought that he had been bitten by a rabid dog. Here we observe globus hystericus with rapid breathing and various dramatic movements of the trunk and limbs, sometimes accompanied by a loud hysterical laryngeal noise intended to resemble a dog's bark. But there is neither true respiratory spasm nor paralysis, and to the careful observer the diagnosis presents no difficulties.

Epilepsy, Chorea, Paralysis Agitans.

There are also other nervous diseases in which the respiratory mechanism may be upset. For example, in a major epileptic fit the tonic phase of the fit is often ushered in by a curious laryngeal wail, the so-called epileptic cry, produced by tonic spasm of the expiratory muscles. Throughout the tonic stage of the epileptic fit the respiratory muscles are fixed, respiratory movements cease, and the patient becomes increasingly blue and cyanosed. Then, when the clonic stage sets in, the cyanosis passes off, the respiratory muscles take part in the jerking movements, and saliva may be jerked from between the lips. I once had the opportunity of doing a laryngoscopy during the clonic stage of an epileptic fit and was able to see the glottis alternately opening and shutting, synchronously with the clonic jerks of the trunk and limbs.

Both in athetosis and in chorea the irregular involuntary movements may implicate not only the limbs and face, but also the respiratory muscles, causing the breathing to be irregular and clumsy, so that the diaphragm and intercostals no longer contract synchronously and the smooth rhythm of respiration is interrupted. In consequence, even the patient's articulation may be jerky. In so-called "paralytic" chorea the superadded factor of muscular feebleness may sometimes be so severe that the patient's voice is reduced to a faint whisper.

The fine muscular tremors of the limbs in exophthalmic goitre may sometimes spread to the trunk and to the respiratory muscles. This tremulous respiration, as Minor pointed out, is best marked during a long expiration.

In advanced paralysis agitans, if we examine the patient laryngoscopically, we may observe a rhythmic tremor of his vocal cords, synchronous with the tremor of the limbs. This laryngeal tremor usually ceases during phonation, but not always. The patient's voice becomes thin, monotonous, and feeble. His articulation, like his gait, becomes festinant, so that he begins his sentences slowly but tends to hurry towards the ends of sentences or of long words, pronouncing the final syllables hurriedly.

Hysteria, Habit-Spasms.

Various respiratory phenomena may be met with in hysteria. Of these, hysterical cough is the commonest, but hysterical tachypnœa or rapidity of respiration, hysterical sobbing, also all sorts of curious laryngeal noises, may be met with in different cases. But, whatever their variety, all these hysterical respiratory affections cease spontaneously during sleep. Hysterical cough occurs almost always in bouts or paroxysms, often at the same special time of day, and most frequently when the patient knows herself to be under observation. It may last for hours at a time. Hysterical cough is unaccompanied by true dyspnœa, whilst abnormal physical signs in the respiratory organs are conspicuous by their absence. Hysterical cough often has a peculiar metallic musical sort of noise. Hysterical laughing or sobbing are frequently part of a hysterical paroxysm, whether occurring before, during, or after the hysterical attack. Hysterical tachypnœa is another fairly common manifestation, consisting in paroxysms of extremely rapid breathing (80, 100, or even 150 per minute), but without cyanosis or other respiratory distress. The pulse remains quiet and steady throughout the attack, there are no abnormal physical signs in the chest, and the temperature remains normal throughout. Hysterical aphonia, another common type, is easily recognised, not only by its concurrent phenomena, but by its characteristic laryngoscopic appearances, showing deficiency of adduction of the vocal cords.

Finally, we have the interesting group of respiratory tics or habit-spasms, which occur in highly strung, often highly intelligent individuals of psychasthenic nervous constitution. Such patients are not necessarily mentally subnormal; on the contrary, some of them are far above the average of intelligence. Respiratory tics are of many varieties. I recall one individual—a distinguished university professor—whose habit-spasm consists in an occasional sudden sniffing inspiration accompanied by wrinkling up of the nose; another individual—a surgeon of world-wide reputation—who makes an occasional sudden inspiratory laryngeal noise from time to time when talking. In another highly strung young man the breathing is interrupted at irregular intervals by paroxysms of short little expiratory puffs at the rate of about two per second, associated with grimacing and with

jerky movements of the arms; another individual gives an occasional little nervous cough or grunt, and so on. Then again, one variety of stammering, in which the patient sticks in the middle of a vowel (less common than the type where he sticks over a consonant) is simply a respiratory tic affecting the muscles of the false vocal cords. Examples of tics or habit-spasms of this sort might easily be multiplied, and many of you can recall for yourselves friends or patients who perform peculiar respiratory actions of this sort. A tic or habit-spasm, it should be remembered, is a psychomotor affair of cortical origin, consisting in the frequent explosive repetition of the same motor act. It never interferes with voluntary movements. Sometimes the tic takes place automatically and without the patient's conscious attention; in more severe cases the tic absorbs the patient's attention during its performance, and is accompanied by a feeling of irresistible compulsion. The greater the psychical abnormality the more violent does the tic tend to be.

THE NOSE, THROAT, AND EAR REQUIREMENTS OF AIRMEN.

PROBLEMS PRESENTED BY THE INTERNATIONAL MEDICAL REQUIREMENTS FOR AIR NAVIGATION, WITH SPECIAL REFERENCE TO THE NOSE, THROAT, AND EAR.

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THAT the airman should be medically fit is a dictum that none can deny. It stands to reason that anyone subject to rapid changes of atmospheric pressure and with such physical responsibilities as are demanded of a pilot should be organically sound, especially in regard to the nose, throat, and ear. All aviation medical boards, therefore, have laid down standards which, in the early days—when indeed there was often little or no medical examination of flying personnel—were mostly arbitrary, but which became modified from time to time as knowledge was acquired of the physiological attributes essential for successful flying.

The object of this paper is to discuss such physiological attributes in regard to the nose, throat, and ear, and to draw attention to the process by which these standards are being confirmed or refuted. With more than four years' experience in the examination of candidates, I know of many instances where the question of acceptance or rejection of an individual has produced sound arguments on both sides; in consequence, it has seemed to me of interest and value to consider some of these cases, more especially in the light of the international medical requirements for civilian pilots. It is necessary to pass in review the experiences upon which such requirements were undoubtedly founded.

The Aviation Candidates Medical Board of the Royal Air Force insists that candidates with no previous experience of flying shall have hearing in either ear equivalent to a forced whisper at a distance of 20 ft.; perforations of the drum, chronic suppurative otitis media, and a radical mastoid operation, successful or otherwise, are causes for rejection. These are excellent safeguards: a fair number of pilots who—either inadvertently or before the Aviation Candidates Medical Board was established—were instructed in flying, were then found to have trouble in the air, and have since been invalided out for one or other of the reasons cited above. They frequently suffered from dizziness or headaches, sickness or exacerbations of chronic suppurative otitis media, pain or ringing in the ears, and there was always the chance of labyrinthine involvement through a necrosed inner wall of the middle ear. The experience of the medical services of other countries has been similar. It is better, therefore, not to take initially the risk of these complications, but where no trouble has arisen over a period of years it becomes a matter for careful thought as to what decision to make.

The International Medical Requirements.

As stated above, many of the rules laid down by Aviation Candidates Medical Boards were in the first place empirical, but the international medical requirements differ in being succinct, and in virtue of what they definitely contain, or perhaps purposely omit, are capable of wide interpretation according to the views prevailing in any particular country. The following are those laid down for the nose, throat, and ear:—

"*Ear Examination.*—The middle ear must be healthy. The aeronaut must possess a degree of auditory acuity compatible with the efficient performance of his duties.

Vestibular Mechanism.—Must be intact and neither unduly hypersensitive nor hyposensitive.

Nose and Throat Examination.—The aeronaut must possess free nasal entry on either side and not suffer from serious acute or chronic affections of the upper respiratory tract.

Each contracting State for the present is to fix its own method of examination and no aeronaut who has given proof of his flying ability shall, so long as he retains such ability, be necessarily disqualified because he fails to fulfil all these requirements."

I wish to call particular attention to this latter clause. Let us now consider these requirements seriatim.

A Healthy Middle Ear.

It was probably felt that external ear and meatal conditions could be left to the discretion of the examiner, but that there could be no dispute as to rejection where pathology is present in the middle ear. I have accordingly taken the records of 450 civilian, or rather would-be civilian, pilots for passengers or goods examined by myself since the armistice; these are the findings in cases where the middle ear was not healthy:—

1. L. Has flown 600 hours during the war. Is now deaf in left ear; a dry perforation on that side. Possible initial date of ear trouble, May, 1918. Became troubled with giddiness in the air in March and April, 1919. This candidate would, no doubt, be unsafe as a civilian pilot and he was accordingly rejected.

2. C. 1050 hours previous flying. A small posterior inferior perforation of left drum, and left ear has discharged off and on during last 12 years—i.e., trouble commenced long before he learnt to fly. Although middle ear was not healthy, and never likely to be so without operation, absence of symptoms with a good flying record was satisfactory, and he was accordingly accepted.

3. M. 500 hours previous flying. Chronic suppurative otitis media both ears, date of origin unknown. Hearing right ear fair but only 1 ft. for a forced whisper in left ear. Candidate deferred for aural treatment, never previously having had any, but failed to present himself for re-examination.

4. K. 300 hours previous flying. Right ear has discharged off and on since childhood; forced whisper heard at a distance of only 4 ft. on that side; large dry perforation in right tympanic membrane. A view similar to that in Case 2 was taken, and he was accepted.

5. B. Has flown over 2000 hours; airman by profession. Ears have run off and on since childhood; hearing good in either ear, right drum scarred; a large posterior inferior perforation in the left drum. Assessment similar to that made in Case 2.

6. S. Number of hours flown about 1250; a discharge from left ear off and on since age of 12. Hearing on both sides good, but right drum opaque; an anterior perforation of left drum. Candidate accepted.

7. T. Has flown more than 1000 hours. In 1914 left ear discharged, and has run off and on since. Hearing good in either ear, but a posterior superior scar in left drum. Candidate accepted.

Bearing in mind the frequency of breakdown of pilots suffering from a like condition, the outstanding feature of the above and subsequent cases is, I think, adequate illustration of the fact that in certain people the bodily mechanism can, for a time at any rate, rise superior to serious physical defects. A consideration of the above cases shows, moreover, the wisdom of a saving clause as to previous flying ability. It was felt that five of the seven candidates described

above had given such proof of flying proficiency that it would be manifestly unfair not to accept them at once in spite of their disabilities, especially in the absence of any present or past complications of their disease. Their middle ears were not healthy, but they had always been serviceable enough for efficiency, and the public would have been losers by the rejection of such men. It should here be added that particular stress is laid during the examination on a concomitant search for any internal ear trouble that may be present, as also on the presence or absence of exacerbations of middle-ear disease at any time in the past history. The regulations also provide an additional safeguard—viz., periodic medical examinations at maximum intervals of six months.

Auditory Acuity.

What is efficient flying auditory acuity? The importance of hearing to airmen lies largely in the fact that they may be able to detect engine defects and to use telephones, but of course hardness of hearing is a serious handicap to success in almost any trade or profession. The following are among those who presented themselves for examination:—

1. P. Had 2300 hours previous flying. Hearing nil in right ear, normal in left. Right ear trouble, dating from age of 10, due to an old chronic catarrh. As a fighting pilot this man would have been at a disadvantage in having imperfect ideas of direction of sounds, such as those made by shells and bullets, but because of his past record he was considered quite trustworthy as a civilian pilot, and was accepted.

2. P. In civil life an airman and engineer, 2000 hours previous flying. Right drum retracted and opaque, but good hearing on that side. Left ear ran in childhood; hearing practically nil on this side, there being an old healed suppurative otitis media with a retracted adherent membrane. Same view taken as in Case 1.

3. S. In civil life an airman, 3000 hours previous flying. Right ear absolutely deaf for last nine years; no reason could be given or cause found. Left ear normal. Similar view taken as in Cases 1 and 2.

4. K. In civil life a test pilot, 3000 hours previous flying. Hard of hearing in both ears from childhood; hears a loud voice in right ear at a distance of only 2 ft., and in left ear at a distance of about 1 ft. Both drums retracted, scarred, and opaque, but no signs of active disease. Vestibular reactions are normal. Particularly alert, a good lip-reader, and has excellent testimonials from his firm. Flown successfully for five years, instructed for a considerable time at a civilian school, acted in the army as instructor, test pilot, and ferry pilot, and since 1917 has tested all experimental machines and numerous others of a well-known firm.

This last-mentioned case of bilateral hardness of hearing is particularly interesting; in spite of his handicap the airman learnt to fly successfully, and confidently asserts that he can at once detect any change in the noise of his engines. He is of exceedingly active mentality and his other senses are extremely acute. He was accepted in view of the previous successful flying history.

Vestibular Mechanism.

If by "intact vestibular mechanism" is meant a vestibule where no pathological process is or has been present, candidates whose vestibular mechanism is or has been so involved should be rejected. The phrase "unduly hypersensitive or hyposensitive" is open, however, to much more dubiety, and in the present state of our knowledge there are diverse opinions as to its correct definition. According to Colonel Isaac Jones, in his book entitled "Equilibrium and Vertigo," [1] the Americans during the war laid very great stress on the Bárány tests, and actually rejected candidates with a nystagmus period of under 16 seconds or over 36 seconds, after a period of rotation to right or left, consisting of ten turns in 20 seconds. They have apparently modified this arbitrary rule, according to their official publication of February, 1920.[2] In regard to efficient service pilots at the front, Sydney Scott showed that the reactions of the semi-circular canals do not serve to indicate a pilot's flying ability,[3] and Bilancioni says that in normal individuals the nystagmus varies between extremely wide limits.[4]

In a paper of my own on the subject of labyrinthine reactions published last year [5] I showed that some of our most experienced pilots failed to satisfy American rotation standards, and concluded that "in the absence of a discovery of present or past signs or symptoms pointing to an aural affection, routine examination by means of the Bárány tests is superfluous, provided that a thorough medical examination is made." With regard to rotation tests, the Aviation Candidates Medical Board of the Royal Air Force is inclined to lay very much more stress on the ability to perform certain simple acts immediately *after* a period of rotation, as also on a history pointing to hypersensibility to motion in trains, swings, or ships—i.e., to what are apparently excessive labyrinthine symptoms; such hypersensibility is always carefully noted and a thorough labyrinthine examination made, especially of individuals who have trouble while flying or are without previous flying experience. In connexion with the ability to fly with an apparently unsatisfactory condition of the labyrinthine mechanism the following two cases of civilian pilots examined are interesting:—

1. B. Previous flying hours, 900. Never could stand the sensation on swings and merry-go-rounds, and always feels ill at sea. Impossible to carry out Bárány tests on him, because on rotation he immediately felt ill and begged to be stopped. Nose, throat, and ears normal, Eustachian tubes pervious. Had a crash in October, 1916, with slight concussion, and since suffered at times from nervous debility. In 1919 flew successfully as a pilot; the history of concussion places one in doubt as to whether the symptoms were purely cranial, or labyrinthine, or both. Incidentally he was a heavy cigarette-smoker.

2. K. Number of flying hours, 250. In spite of this cannot stand being rotated; very quickly feels ill, and in boyhood never liked swings or roundabouts, being too much upset by the motion. No cause could be found for this hypersensibility which, however, has not interfered with his flying career.

The above two cases could be multiplied, but it must be remembered, and indeed practically every experienced pilot will agree, that the motion and effects of the rotary chair are quite different from those of an aeroplane, and the symptoms produced thereby very much greater and more intense. It is almost impossible to make a fair comparison of the two forms of motion, as the chair, unlike the aeroplane, spins round in a small axis in the horizontal plane, and also because the labyrinthine effects produced thereby arise most markedly just after rotation is stopped, there being, of course, no such deliberate stoppage of an aeroplane.

We now turn our attention to the nose and throat, and consider the regulations, or rather indications, with reference to the state and fitness of the upper respiratory tract. It is here, indeed, that we find in practice most exception to theoretical considerations. "The aeronaut must possess free nasal entry on either side" say the international requirements: "mouth-breathing constitutes a serious flying disability" says the Aviation Candidates Medical Board, R.A.F. My statistics of these 450 experienced pilots tell us, however, that 32 of them were mouth-breathers in all degrees ranging from partial or occasional to permanent, and that only one of these 32 was rejected on medical grounds and then not because of mouth-breathing; the other 31 were good pilots with good records and were deservedly granted licences.

Free Nasal Air-entry and Mouth-breathing.

For the moment it will be convenient to consider the above 32 cases together; later it will be necessary to consider others where mouth-breathing was definitely secondary to a cause obviously present at the time of examination in the nose or throat and almost crying out for remedy. In the cases of these 32 it was rather different; in some there was an associated more or less marked septal deviation, and in others diseased or hypertrophied tonsils or adenoid remains were discovered; but it must be said that not one of them had any other signs or symptoms of nose and throat disease. In these cases one did not feel justified

in recommending operation; some had already had operative interference with little amelioration as regards their mouth-breathing, and in some no vestige of a possible cause could be found and the condition was evidently a bad habit, and also, it must be said, not a very marked one.

Mouth-breathing per se is presumably a disability because of the frequently associated parched buccal and pharyngeal mucous membrane, spongy gums, or excitation produced by currents of air on carious or ill-stopped teeth or unhealthy tonsils. These symptoms are much more pronounced in some individuals than in others, and quite a number of mouth-breathers neither have nor complain of any discomfort. One must remember also that mouth-breathing itself is only a symptom, sometimes, but by no means always, associated with other physical or skeletal conditions such as deformed chest or highly arched palate. Again, nearly all pilots above a height of 12,000 ft. begin to breathe through their mouths in order to obtain sufficient oxygen from the rarefied atmosphere. The conclusion to be drawn, therefore, is that there are quite a number of pilots in whom mouth-breathing constitutes apparently no disability at all and that the assessment of any symptoms due to it is the important point.

Deviated Septum.

There is a small but distinct group of cases among these 450 experienced airmen in which nasal examination seemed to leave one no alternative but to say that submucous resection should be performed irrespective of the candidate's history of symptoms as given by himself. In this connexion one must remember that there is a marked tendency on the part of examinees to pooh-pooh any discovered apparent disability as having given rise to no, or at any rate, to only slight, trouble in the past. It must be remembered, on the other hand, however, while giving due weight to such a history, that symptoms apparently trifling in importance on the ground tend to become considerably aggravated in the air. Deviated septum, traumatic in origin, is of fairly frequent occurrence among experienced pilots, sometimes because of their sporting instincts in the way of boxing or the rougher games, but more so because of their liability to crashes with trauma about the face and head. In this class I must place six airmen out of the total number seen, not only because examination at once suggested the need for correction, but more so because of the concomitant symptoms. Frequent colds in the head with mouth-breathing were usual symptoms, obstruction in one or the other nasal passage was practically always present, while two were subject to attacks of hay fever. In spite of these signs and symptoms, however—i.e., acute and chronic affections of the upper respiratory tract and absence of free nasal air-entry on one or the other side—three of these airmen had successfully flown over 1000 hours, and the remaining three 150, 400, and 600 hours respectively. There can be little doubt that submucous resection would add materially to their comfort and well-being, and indirectly therefore to the longevity of their flying life.

Enlarged or Unhealthy Tonsils and Adenoids.

Ten airmen were found in whom signs and symptoms, such as marked hypertrophy, frequent sore-throats or attacks of quinsy, enlarged glands in the neck, and in the case of adenoids repeated colds and occasional attacks of Eustachian tube obstruction, left no doubt that operation would be an advantage. A large number of others with unhealthy tonsils was seen, who, on their own statement, had never had any trouble. These ten airmen, in spite of their symptoms, had flown periods ranging from 140 to 2700 hours. In this connexion I mention a well-known stunt pilot and instructor who, besides having a tendency to mouth-breathing with distinctly unhealthy tonsil remnants present, had a history of occasional migraine attacks, and also possessed visual defects. This pilot had flown 1550 hours, had been up to 23,000 ft. with no discomfort and without oxygen, and apart from a gunshot wound in the left leg in 1915 had never suffered from any disability!

Miscellaneous.

In this group I have placed four airmen. Two suffered from hay fever every year without any flying trouble. Both had flown successfully about 1500 hours. A third was subject to frequent colds and evidently had a very susceptible mucous membrane; when seen, the whole of the upper respiratory tract was in a condition of acute catarrh without any apparent clinical evidence of the cause. In spite of this he had flown 900 hours successfully. A fourth suffered from atrophic rhinitis probably due to too extensive turbinal operation in civil life, but had, nevertheless, flown 150 hours without discomfort or mishap.

Conclusion.

I have considered the above groups of cases because, although various aural or upper respiratory tract potential disabilities were present, the flying efficiency of the airmen concerned has been proved over and over again; I feel, however, as stated above, that it would be both wrong and misleading to quote such cases without again emphasising the point that in my opinion these airmen were successful *in spite of* their defects, and I cannot doubt that their standard of excellence would have been higher had they conformed to the normal. What really does matter, and probably happens in all such cases, is that a power of compensation exists and minimises any potentially troublesome defects. The same remarks might be made with regard to refractive errors in cases of maimed or partially disabled pilots and with respect to other physical conditions diverging from the normal. Such emphasis is perhaps necessary, as medical boards in all parts of the world have laid down stringent standards for untrained would-be aviators; tempered with discretion and discrimination, however, on the part of medical examiners there can be no doubt that this is, and has been, the right and wisest course to pursue.

Should any relaxation of medical standards be made when the demand for pilots exceeds the supply in the case, say, of another great war? If so, in what direction should this relaxation take place? Writing with respect to the nose, throat, and ear it is apparent that apart from a number of candidates who might be temporarily deferred for operative treatment, the debatable cases would be men with chronic suppurative otitis media with or without hearing defects, who were in other respects perfectly healthy. In a recent paper of mine entitled "The Incidence of Nose, Throat and Ear Disease among Aviation Candidates,"[6] I showed that only about 3·6 per cent. of the young men presenting themselves as aviation candidates suffer from aural disease, so that the number of such cases would be small; were it necessary to consider the question of admitting some of these candidates, and, in my opinion, this would only be justified under very extreme conditions, it seems that the presence or absence of symptoms or exacerbations of disease over a preceding lengthy period of years should play an important part in the adjudication; other things being equal, however, it would appear incontrovertible that a candidate sound and healthy in all respects is more likely to be useful and successful over a period of years than one with any physical defects, however unimportant the latter may seem to be at the time of examination.

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ALIMENTARY INFECTIONS IN CHRONIC ARTHRITIS.

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THIS communication is based upon an analysis of 200 personally investigated cases, of which half were hospital patients and the other half private patients, so that many different walks of life are represented. Gout, venereal or tuberculous disease of the joints, and all cases of monarthritis have been excluded, but no other selection has been exercised, and with these exceptions the cases may be regarded as consecutive. Although uniform infection of the whole alimentary tract is never encountered, multiple areas of infection are often found. They can be divided roughly into an upper zone which includes the mouth and throat, and a lower one which comprises the bowel and its appendages. In the present series, active sepsis was present in the throat and nose in 34 per cent. of the cases, and around the teeth in 52 per cent., whilst infective streptococci were recovered from the fæces of 84 per cent. The great importance of the lower zone has been shown very clearly by Sir Arbuthnot Lane and is well demonstrated by the two following cases:—

CASE 1.—In this instance absolute cure followed the removal of the infected colon, although areas of chronic infection in the tonsils were left untreated. M. H., a woman of 28, had suffered from severe constipation since infancy and from rheumatic arthritis for 15 years. All her joints were affected. Her colon was removed in 1913 and liquid paraffin taken as a routine measure afterwards. No other treatment of any kind was employed. She became free from pain after a few days and has never had any more pain or swelling in her joints up to the present date. She has gained four and a half stones in weight, can bathe in the sea with impunity, and leads a very active life with a normal feeling of vigorous well-being.

CASE 2.—This patient's arthritis was cured by colectomy although he had pyorrhœa alveolaris which was left untreated. H. M., a boy of 13, had been constipated for many years and had had rheumatoid arthritis for 15 months affecting knees, ankles, elbows, and jaw. There were pyorrhœa pockets between the gums and teeth and radiograms showed involvement of the periodontal membrane. Colectomy was performed and the pain left his joints. During the next few months a flexion contracture of the elbow straightened itself without any manipulations, and now, five years later, he is a well-developed young man following a laborious occupation and with no trace of his former joint trouble.

Comparison of Forms of Infection.

Doubtless at times much injurious infection takes place from the tonsils and jaws, but the invasion from the bowel is of a much more serious nature. Numerous instances can be found in which chronic arthritis has commenced many years after the extraction of all the teeth. This had occurred in 15 per cent. of the present cases, the period which had elapsed between the extractions and the onset of arthritis varying from two to 20 years and the average time being 11 years. It is clear that in these patients invasion of the joints must have taken place from some other mucosal focus. Another 16 per cent. had had total extractions done during the course of the arthritis and yet continued to have outbursts of arthritis with the involvement of fresh joints. Almost all the extractions had been done for gross septic conditions. Critical analysis of the throat histories shows a similar state of affairs. Four per cent. of the patients had had their tonsils enucleated many years before the onset of the arthritis, and another 5 per cent. had received no benefit from enucleation carried out during the course of the disease. The remaining 91 per cent. still possessed their tonsils. If this inquiry is taken one step further it is easy to find patients with continued arthritis who are both edentulous and devoid of tonsillar tissue. The explanation of the failure in the treatment of these patients lies in the infection which was taking place from the lower zones in the bowel and which had been neglected during the cleansing of the mouth.

Localised and Diffused Infections.

Anatomically the lower zones of infection can be divided into two groups. In the first group are localised infections. Mechanical agents, such as hard fæces, obstructions, stasis, ptosis, and distension with gas produce loci of depressed resistance through attrition, local poisoning of the mucosa, and interference with the flow of blood and lymph. In these places infective bacteria establish areas of chronic infection in the wall of the bowel. Stercoral ulcers, diverticulitis, ulcerated piles, and chronic appendicitis are common examples of this type of infection. In the second group there is a diffuse infection which sometimes involves the whole intestine from duodenum to rectum, and may or may not be associated with circumscribed zones of special activity such as have been placed in the first group. A further description of this common type of case is given later in the paper.

Most of the infections are streptococcal, but a few are staphylococcal. In the present series the latter were only 4 per cent. of the whole.

Staphylococcal Infections.—The two following cases are typical examples:—

CASE 3.—D. W., a boy aged 5, had suffered from constipation since birth and from Still's disease for two years. His hips, knees, ankles, wrists, and elbows were seriously involved. He had much intermittent pyrexia with rigors. Blood cultures yielded a pure growth of *Staphylococcus citreus*. Cultures taken from his ileum during a laparotomy also gave a growth of the same organism.

CASE 4.—F. P., a woman of 27, had for three years suffered from rheumatoid arthritis of the fingers, wrists, knees, and spine. Stasis occurred in her ileum and colon. At laparotomy her mesenteric glands were seen to be acutely enlarged. Cultures from them gave a pure growth of *Staphylococcus aureus* and similar organisms were obtained from the contents of the ileum.

Streptococcal Infections.—In this widely distributed group are included infections by many different types of streptococcus, and only 6 per cent. of the present series were hæmolytic. In about one-third of the cases abnormal forms of the colon bacillus of the non-lactose-fermenting or late-lactose-fermenting varieties were found in association with the cocci. In the diffuse infections the streptococci are distributed along the alimentary tract in a definite pattern. In the pelvic colon they are much less numerous than the colon bacillus. In the ileo-cæcal region they become more conspicuous and at the higher levels are usually present in pure culture. The table illustrates this distribution. In the second column are given the averages of analyses carried out on 21 patients from each of whom serial cultures were made at several levels at laparotomy. The pattern was the same in each of the 21 cases. In the third column are given the averages of analyses made on a much larger number of patients. In this series many cases are included in which an analysis was made at one level only. Again the same pattern can be seen. Streptococci predominate in the small bowel and the colon bacillus in the large bowel. The precise level at which transition takes place from streptococcal to *B. coli* dominance varies in different patients, probably on account of variations in the chemical nature of the contents of the bowel determined by differences in diet, peristalsis, and ferment efficiency. The point of transition is usually in the ileo-cæcal region, but may be on either side of the ileo-cæcal valve.

Showing Ratio of Streptococcus Longus to B. Coli.

Site.	Averages of 21 serial analyses.	Averages of all analyses.
Duodenum	100·0	100·0
Jejunum	100·0	100·0
Upper ileum	80·20	83·17
Lowest ileum	46·54	41·59
Cæcum	24·76	18·82
Pelvic colon and fæces	3·97	14·86

Morbid Conditions Underlying these Infections.

Chronic infections do not arise in the normal alimentary tract. Derangements, often of a very gross nature, were traced in more than 90 per cent. of the present series.

1. Stagnation is almost universal. Three-quarters of the patients had suffered from constipation for many years prior to the onset of the arthritis and in almost one-half of these cases the constipation had been very severe. As measured by means of an opaque meal and X rays, stasis was found as commonly in the small bowel as in the large. In the colon it occurred in 89 per cent. of cases, the average time taken for the evacuation of the greater part of the meal in these cases being more than three days, while in some instances a week was required. In the ileum stasis was found in 90 per cent. of cases. In these the average time required for the ileum to empty, after all the barium had left the stomach, was eight hours, whereas under normal circumstances only three and a half or four hours are needed. Stasis was not so common in the stomach and only occurred in one-third of the cases. The average time taken for the meal to pass through the stomach was eight hours, or twice the normal time. In many of the patients repeated overloading of the colon over a period of years had led to compensatory hypertrophy with elongation. Three-quarters of the patients had long redundant loops of pelvic colon and in two-thirds the transverse colon was doubled in length and hung in a tortuous festoon across the abdomen. Many patients had developed secondary obstructions which aggravated the primary stasis. One half of them had a kink in the last coil of ileum. One-third had a very acute splenic flexure in the erect posture and as many as 90 per cent. had a "last kink" in the pelvic colon. The appendix was examined at all laparotomies and whenever the opaque meal entered and displayed its shadow on the fluorescent screen. It was abnormal in three-quarters of these cases. Sometimes it was the seat of chronic inflammation, but more frequently it was fixed to the posterior abdominal wall and acted mechanically by interfering with the passage of the food through the last coil of ileum.

2. Ptosis had occurred with great frequency to the hindrance of peristalsis and the free flow of blood and lymph. For the purposes of this description only outstanding examples in which the ptosis was so severe as to be beyond all dispute have been noted. In 51 cases the greater curvature of the stomach was within an inch of the symphysis pubis in the erect posture, in 133 cases the cæcum was deep in the pelvis. In an equal number the hepatic flexure was in the right iliac fossa and in about the same proportion of cases the transverse colon fell to the level of the symphysis pubis.

3. Ferment action was commonly defective and digestion slow, so that much unassimilated food found its way into the large bowel where it formed a suitable nidus for bacterial activity. The production of an excess of gas affords the most direct evidence of such activity and 130 of the patients complained of this undue flatus in the colon. A similar proportion complained of gastric symptoms which were of many different kinds and varied in severity from heartburn and nausea to vomiting and acute epigastric pain after meals. As a group these symptoms indicate the great frequency with which errors of digestion in the stomach and duodenum occur in arthritic patients.

4. Apart from bacteriological analyses much direct evidence of infection of the colon was forthcoming. Intermittent looseness of the bowels, short attacks of severe diarrhœa, and the repeated passage of mucus were of common occurrence, whilst in a small minority of cases persistent diarrhœa replaced the more usual constipation. A history of one or other of these varieties of diarrhœa was given by 67 of the patients.

5. In certain cases there were gross defects of other kinds in the alimentary tract. Chronic gastric ulcers were seen in 17 per cent. of those cases upon whom high laparotomies were performed and histories of recent severe hæmatemesis was given by 2 per cent. of the other patients. Gall-stones were found at 11 per cent. of high laparotomies and typical histories of gall-stone colic were given by 3 per cent. of the remaining patients.

Masked Stasis and Hidden Sepsis.

Study of this series has shown again and again that stasis and sepsis can exist in the intestine and yet not be manifest without investigation. The bowels may act every day in spite of serious delay in the colon. The residues from the meals of the preceding 24 hours are not evacuated, but are stored up by such patients and passed out at the forty-eighth or seventy-second hour, as the case may be. The colon always contains the accumulated debris of two or three days' meals. In other cases the latent stasis is in the ileum, where the food may be retained for twice the normal time before it is passed into the cæcum. Such a delay does not of necessity interfere with the regularity of defæcation or give rise to discomfort in the abdomen. Marked stasis of these types is at once brought to light by systematic radiography, but cannot be detected readily in any other way. Sepsis in the bowel is just as frequently masked. Even extensive invasion of the bowel by infective bacteria such as streptococci does not always produce diarrhœa or any other sign of irritation. The true nature of these cases can only be detected by serological tests and the examination of cultures of the stools. Serious streptococcal infection of the ileo-cæcal region sometimes occurs even when the flora of the fæces appears to be normal. Such cases have frequently been investigated at laparotomy when samples of chyme could be obtained from the small intestine. In other cases they can be detected by giving the patient an ounce of lactose, a drachm of magnesium sulphate, and the juice of a lemon in water before breakfast on three consecutive mornings and examining the stools which are passed on the third day. The lactose reaches the colon and promotes the growth of streptococci which are hurried onwards so rapidly by the magnesium sulphate that they can be recovered from the stools.

In brief, it can be stated that stasis often occurs in the colon although there is a daily evacuation; stasis often occurs in the ileum, even when the patient does not refer any symptoms to the alimentary tract; streptococcal infections are often present in the bowel, although there are no symptoms of irritation of the colon, and extensive infection of the ileo-cæcal region does not always lead to the excretion of living streptococci in the fæces.

Results of Treatment.

The condition of the alimentary tract dominates the outlook in rheumatoid and osteo-arthritis. The general scheme employed in the treatment of the present series of cases has been as follows. The entire alimentary tract was surveyed carefully in each case and an estimate formed of the relative degrees of septic absorption occurring at the various levels. The more accessible areas of infection in the jaws, throat, and intestines were treated surgically, and all the disorders of the digestive tract which had encouraged the development of chronic infection were dealt with. Autogenous vaccines proved of great value when used to supplement these measures. They were prepared from infective bacteria of all the principal zones of sepsis. Streptococci obtained from different foci in the same patient usually vary in their cultural characters, and each strain was included in the vaccine. Chronic infection frequently damages the thyroid gland. In the present series minor forms of subthyroidism were very common, whilst well-defined myxœdema or goitres of considerable size were seen in 14 per cent. of cases. There is an intimate association between immunity reactions and the functions of the thyroid gland. The dry extract of the thyroid was given in all such cases with great benefit to the joints. Accurate diagnosis, aided by radiography and bacteriology, makes radical treatment and cure possible. In the present series of cases, which have been followed for varying periods up to nine years, 89 per cent. show very great

improvement or complete arrest. Of the failures one-quarter had received very partial treatment only and could not be inoculated with vaccines. If it were possible to exclude those cases in which circumstances such as age, temperament, and position in life prevented the full use of radical methods the results would have been still more encouraging.

THE PROBLEM OF CHRONIC SUPPURATION OF THE MIDDLE EAR,

WITH SPECIAL REFERENCE TO IONISATION.

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THE disabilities resulting from the chronically discharging ear have recently claimed increasing attention from the profession. During the war, in the British Army alone, some tens of thousands of men were found to be suffering from this disease; among London County Council school-children there are over 12,000 "recognised" cases, and the actual number must be well in advance of this figure.

I wish in this short article to explore certain methods by which the disease may be dealt with and briefly to indicate my own experience in those methods.

Prevention.

For purposes of prevention of chronic middle-ear suppuration three separate and distinct periods must be recognised as preceding the condition, viz.: (*a*) the period before there is any affection of the ear; (*b*) the period when the ear is first acutely inflamed and before the drum-head has ruptured; (*c*) the period of acute middle-ear suppuration after rupture of the drum-head.

(*a*) *The period before there is any affection of the ear.*—Children should be taught to breathe correctly, to keep their noses in a cleanly state, and to live as hygienic a life, in all ways, as possible. A certain proportion of suppurating ears certainly originate in neglect in observing these rules.

(*b*) *The period when the ear is first acutely inflamed and before the drum-head has ruptured.*—If it were possible to treat all ears suitably in this stage of the disease, probably 90 per cent. would never pass into the stages beyond.

Several barriers at present prevent this early treatment. First, the public, ignorant of the importance of the condition, make no endeavour to obtain treatment at all; when the patient is eventually brought under the surgeon's care, the condition has advanced considerably beyond this stage. Secondly, too many practitioners would shrink from undertaking the delicate, though fairly simple and small, operation of incising the drum-head. Comparatively few students to-day, when they leave hospital, are capable of efficiently performing the operation of paracentesis, or, indeed, of recognising a normal drum-head. There should be no great difficulty in educating the practitioner in this respect; it remains to educate the public—a process most easily attained, perhaps, by an intensified campaign through the press.

(*c*) *The period of acute middle-ear suppuration after rupture of the drum-head.*—If ears were correctly treated in this stage, very few would pass on to chronic suppuration.

Treatment by Ionisation.

The routine treatment of discharging ears has long entailed the use of various drops, powders, lotions, &c., often carried on for months and even years without effecting a cure. Some cases after varying lengths of time have got well, possibly as the result of the treatment, possibly in spite of it.

Ionisation consists of passing a continuous current through a Leduc's rheostat, the patient being placed in the circuit, and the positive pole (which can conveniently be made in the form of a vulcanite ear-speculum containing a metal band which does not come into contact with the skin) placed in the ear which contains some of the ionising fluid, while the negative pole is placed upon the patient's arm or leg. The exact details of this technique have already been published by A. R. Friel, Salisbury Sharpe, and others, and I will therefore not elaborate this point, but it would be well to emphasise the necessity of thoroughly cleansing the ear and removing all discharge, débris, &c., before attempting to ionise, otherwise failure is certain.

The ionising fluid generally used by myself is:—

$ZnSO_4$	5 g.
Glycerine	57 c.cm.
Water to	1000 c.cm.

Equal parts of the above and hot water are employed. If, however, the ear is sore and painful and the mucous membrane swollen, salicylate of zinc may be used as the ionising fluid, the negative pole being first used to produce the sedative effect of the salicyl ion, and then the positive pole to produce the action of the zinc ion on the tissues.

Ionisation has been established as one of the most valuable and satisfactory means known for treatment of these cases. The method has at present definite limitations, but in the near future some of these may be curtailed. The indications for ionisation in this disease as observed in personal experience of some hundreds of cases permit the following groups to be described as *unsuitable:* (*a*) cases which present large granulations and polypi in the tympanum; (*b*) cases where there is any disease of bone either of tympanum or mastoid; (*c*) cases where the antrum is diseased; (*d*) cases where there is disease of the Eustachian tube; (*e*) cases with any naso-pharyngeal condition favouring re-infection of the ear; (*f*) cases where perforation in the membrane is so small that fluid cannot pass satisfactorily from the meatus into the tympanum. With any qualifications applicable under these headings, it may be generally stated that cases suitable for ionisation are those where the ionising fluid can reach the whole area of suppuration.

It may be urged that most cases, if not all, of chronic middle-ear suppuration are not limited to disease of the tympanum, but that the antrum is also affected, and therefore ionisation is contra-indicated. As a matter of experience, however, the antrum is often so slightly affected that successful treatment of the tympanum by ionisation is not interfered with. My results obtained in various series of cases show a cure of the suppuration in percentages varying between 53 and 67, the whole averaging about 60 per cent. In some cases one ionisation is sufficient; in others two and even three administrations are needed.

Use of Ionisation in Diagnosis.

Besides being a valuable method of treatment, ionisation is also, in many cases, an important aid to diagnosis. It frequently happens that in examining an ear, a little pus can be aspirated from the antrum or aditus; it is hard to say definitely whether the antrum is too far diseased to hope for a cure by ionisation, and whether indeed the proper treatment should not be a mastoid operation. Ionisation frequently clears up this point; failure to effect a cure or any improvement justifies the assumption that disease of the antrum is sufficiently advanced to call for a mastoid operation. I have frequently used this as a deciding factor; the condition found on performing a mastoid operation has always fully justified this procedure.

Ionisation as After-Treatment.

This brings us to another use to which ionisation may be put, and which, so far, I believe, I have been alone in employing—viz., as part of the routine after-treatment of mastoid operations. All surgeons

who have done many mastoid operations for chronic middle-ear suppuration know how lengthy the after-treatment of these operations may be—sometimes extending into many months—a discharge even then frequently continuing for years. With a view to shortening this period, I have employed ionisation as part of the after-treatment for some considerable time. Among other advantages of its use are the following: (*a*) it causes a reduction of the inflammation; (*b*) it cleans up the wound; (*c*) it lessens pain, and so makes the dressing less objectionable to the patient.

In this treatment the question arose of its duration after operation. I have treated a fair number of cases in this way; a few statistics given below may be of interest. The shortest time after operation that has elapsed before administration of ionisation in my own cases is two weeks.

Results.

Speaking generally, the results so far indicate that cases ionised soon after operation clear up more rapidly than those ionised later; these again clear up in a shorter time than those which are not ionised at all.

The following statistics show results obtained by me during the past two years.

For the period 1920–21: number of mastoid operation cases ionised, 158; number of successes, 138 (=87·3 per cent.). By "success" is meant the curing of the suppuration and the healing of the wound. Of these cases 119 had 1 ionisation, 28 had 2 ionisations, 5 had 3 ionisations, 3 had 4 ionisations, and 3 had 5 ionisations.

The total length of after-treatment (of a series of 64 of the more recent cases) from the day of operation to the day of successful ionisation, was 700 weeks, which gives an average per case of 10·9 weeks. Of these 22 cases were dry under 10 weeks and of these 22 cases 2 were dry in 5 weeks, 4 in 6 weeks, 5 in 7 weeks, 6 in 8 weeks, and 5 in 9 weeks. All these early cases had one ionisation only with the exception of two cases, which were ionised twice.

For the period 1919–20: Number of mastoid operation cases ionised, 118; number of successes, 80 (=67·7 per cent.).

It is very difficult to obtain exact information of the percentage of successes after mastoid operation from *hospital* cases; but so far as I have been able to ascertain, the percentage generally is very much below that shown in the above results. The lower percentage for the period 1919–20 is probably due to the fact that the cases during this period were not ionised so early as those of the period 1920–21. The above percentage of successes must be considered very satisfactory, especially when it is remembered that the material is some of the worst in London.

The objections, from the patient's point of view, to ionisation are not serious. Many patients feel nothing at all, some complain of a feeling of heat or slight burning in the ear. Others complain of giddiness—generally when the current is being turned on or off, particularly the latter, and more especially if it is done too quickly. Occasionally actual vomiting is produced but this is rare. Practice, however, shows that the disadvantages are hardly worth considering, while the advantages are great. There is a big field for this work, and its extension may be strongly recommended.

GLASGOW WESTERN INFIRMARY.—The report of this infirmary, which was submitted to the annual meeting of subscribers on Dec. 7th, showed that in spite of increased public support, expenditure exceeded ordinary income by £26,367. In order to make up this deficit it was necessary to use the balance of extraordinary income received from legacies, to appropriate the whole sum of £6444 subscribed by special appeal, and also to draw from the stock account £654. This year the ordinary expenditure of £102,716 exceeds last year's, but the downward trend of prices encourages the hope that the maximum expenditure has been passed. The managers have been obliged to obtain an overdraft from the bank which amounts to £16,593, and in view of the seriousness of the position are appealing to all classes to continue and, if possible, to increase their support of the infirmary. The daily average of in-patients treated was 557, and the average cost per patient per day was 9*s.* 11*d.*, as against 9*s.* 3*d.* last year.

THE NORMAL LIMIT OF AGGLUTINATION FOR *B. DYSENTERIÆ* (FLEXNER)

AND THE SENSITIVENESS OF SUSPENSIONS.

BY A. D. GARDNER, M.D. OXON., F.R.C.S. ENG.

(*From the Department of Pathology, University of Oxford, Standards Laboratory under the Medical Research Council.*)

IN an article on the Ætiology of Bacillary Dysentery in Asylums in THE LANCET of July 30th, Dr. W. S. Dawson and Dr. W. Moodie describe the results of a number of agglutination tests of the blood of dysentery cases. These tests they performed with two types of bacillary suspensions, the one a "Standard culture" from the Standards Laboratory (Medical Research Council) at Oxford, the other obtained from Prof. L. S. Dudgeon. They state that:—

"With the Oxford antigen, the first trace of agglutinins appeared at the end of the sixth week, and the agglutinins had disappeared at the end of the fourteenth week; while with Prof. Dudgeon's antigen agglutination began to appear at about the beginning of the fourth week, and had disappeared at the end of the fourteenth week also. Maximum agglutination was obtained with Oxford antigen between the eighth and tenth week, and with Prof. Dudgeon's antigen in the seventh week."

Comparison of Suspensions.

The authors refrain from expressing an opinion as to the relative merits of the two suspensions, yet an unbiassed reader of their paper could only judge Prof. Dudgeon's antigen to be a more serviceable material than the standard cultures issued from Oxford. It was therefore desirable to discover whether the apparent superiority were real, and, if so, on what it depended. To this end, and by the kindness of Prof. Dudgeon, I secured a sample of antigen made in the same way and with the same culture as that used by Dawson and Moodie. The strain of Flexner bacillus used in its manufacture is known as Flexner Gallipoli, of which a living culture was also sent to me.

The antigen was apparently a saline suspension of the bacillus, with a preservative added, but the details of its making are unknown to me. Its density was much (somewhere about three times) greater than that of "standard" dysentery cultures which vary round about 500 millions per c.cm. Tested with standard dysentery Flexner (V) serum it gave first-rate flocculation up to a dilution between two and three times greater than was given by the standard culture (Flexner V 12) used in comparison. *Prof. Dudgeon's antigen thus proved to be a suspension of great sensitiveness.* At the same time it betrayed no tendency to spontaneous flocculation.

A broth culture had been made a few days previously with the living Flexner Gallipoli (formalised 0·1 per cent.) and diluted to the opacity of standard cultures. This suspension was included in the test last mentioned, and proved to be slightly more sensitive than Dr. Dudgeon's suspension. In figures, standard agglutination (marked flocculation without sediment) occurred with the standard culture at a dilution of 1 in 625, with Prof. Dudgeon's suspension at 1 in 1500, and with formalised Flexner Gallipoli suspension at 1 in 1800. The stock Flexner culture used in the Standards Laboratory never produces suspensions of such great sensitiveness. *Clearly, then, the strain Flexner Gallipoli tends to give rise to suspensions of higher agglutinability than that of the Oxford cultures.*

The next step was to determine the serological characters of Flexner Gallipoli. With this purpose in view the three suspensions mentioned above were all tested at one and the same time with each of the five type serums which are made in the Standards Laboratory—viz., B. Flexner "V," "W," "X," "Y," and "Z."

The results are given in the table which shows the dilutions at which standard agglutination occurred in every case. When in any particular series of standard agglutination did not actually occur in any

type, the correct value is obtained by interpolation, using Dreyer's reduction table, which works accurately for dysentery cultures. The short series of tubes was used, as in the Widal test, and no great accuracy was aimed at.

Standard serums.*	V	W	X	Y	Z
Standard culture "V" 12	625	38	90	50	15
Flex. Gallipoli (Prof. Dudgeon's suspension) ..	1500	85	110	180	41
Flex. Gallipoli (new formolised suspension)	1800	110	150	220	34

* Each = 100 standard units for homologous culture.

It is clear enough from this table that Flexner Gallipoli is of the same group as (in fact is presumably identical with) the stock Flexner "V" of the Standard Laboratories.

The fact being established that "Flexner Gallipoli" is a "V" strain of unusual sensitiveness, but in other respects of normal character, it remained to consider whether the use of this strain for serodiagnostic suspensions (e.g., for the manufacture of standard cultures) would be an improvement on the use of less sensitive strains such as the Oxford stock Flexner V. Prima facie, it might be fancied that great sensitiveness must be an unmixed blessing, but in reality it is not so. For in bacillary dysentery sero-diagnosis depends upon the demonstration in the patient's serum of a degree of agglutination higher than that met with in normal serums. Now it is well known that normal human serums often agglutinate bacilli of the "Flexner" group. And the more sensitive the suspension used, the higher will evidently be the titre shown by such serums.

Determination of Normal Limit of Agglutination.

It is this circumstance that renders absolutely indispensable for the trustworthy use of any bacillary suspension in serodiagnosis the determination of the *normal limit of agglutination with that particular suspension.* This can only be done in one of two ways: (*a*) by testing a large number of normal serums with the suspension itself, or (*b*) by determining the sensitiveness of the suspension in comparison with another suspension which has been thus tested.

Before standardised cultures of Flexner bacilli were issued from the Standards Laboratory, a determination of the normal limit of agglutination for a suspension of the bacillus was carried out by Prof. Dreyer and myself on over a hundred normal men and a number of women in addition. Owing to the stress of war-time the results were never published. Not a single man whose past history was clear of dysentery gave a reading of as much as standard agglutination at a dilution of 1 in 50 with the suspension used. If, then, one should find a reading of this or greater magnitude given by an unknown serum, it could be taken as abnormal, and, in the absence of any other circumstance capable of raising the normal titre, diagnostic of infection.

Now all subsequent suspensions (standardised cultures) of this type of bacillus have been carefully compared with the original suspension or with one or several suspensions successively standardised, each against the previous one. To each has been given a numerical factor by which allowance can be made for its difference in sensitiveness from the original standard suspension. Thus, if a particular suspension chanced to be three times more sensitive than the standard, it would be given a factor three times the magnitude of that of the standard. Now the number of the standard units in any serum is calculated by dividing the denominator of the dilution figure (e.g., 1/25) by the factor of the suspension used; therefore, if that factor be large, the number of units is small, and vice versa. The factor for the original suspension was so chosen that normal male serums should not contain more than 10 units (a conveniently small quantity). This factor was 3·0, and a serum which gave a reading of 1/25 (standard agglutination) with it contained 8·3 units. Now if the same serum were tested with the above-mentioned suspension of three times greater agglutinability, standard agglutination would be found at a three times higher dilution—viz., at 1/75. If this suspension had not been standardised it would be impossible to tell whether this reading were or were not above the normal limit. But if the suspension had been standardised and given its proper factor—viz., 9·0—the number of units calculated would be 8·3, which is definitely below the diagnostic limit.

Test of Three Normal Serums.

Three normal human serums were tested with (*a*) Prof. Dudgeon's suspension, and (*b*) a standardised Flexner (V) culture.

Serum A with Dudgeon's suspension gave a trace of agglutination in 4½ hours (55° C.) at 1/10, the strongest concentration tested, and after a further 20 hours at room temperature it showed partial agglutination at 1/10, and traces of flocculation extending up to 1/100. The same serum with the standard culture showed no flocculation at 1/10 in 4½ hours, and in 24 hours gave readings of partial agglutination (Standard plus) at 1/10, and nothing in any higher dilution.

Serum B showed in 4½ hours with Dudgeon's antigen partial agglutination at 1/62 and strong trace at 1/125, whereas the standard culture showed only a strong trace at 1/12. After 24 hours the flocculation of Dudgeon's antigen showed little or no progress; the standard culture now showed nearly total agglutination at 1/12 and a questionable minute trace at 1/25. With both serums the flocculation of Dudgeon's antigen was very irregular, in the sense that only a minority of the organisms present appeared to undergo flocculation. With the standard culture the flocculation was of the usual type seen with specific serums.

Serum C was tested with a fresh formolised broth culture of Flexner Gallipoli and with a standard culture. The serum agglutinated the former definitely up to 1/20, but gave no trace with the latter at 1/10.

Limits of Normal Agglutination with Flexner Gallipoli Suspensions.

We see, then, that the superior sensitiveness of Flexner Gallipoli is equally evident whether specific or normal serums are used for the comparison. Quantitatively, it would seem that the difference of agglutinability is even greater with normal than with specific serums. The limit of normal agglutination with Flexner Gallipoli suspensions is therefore somewhere between twice and ten times higher than with the standard culture. Clearly it is impossible to draw any conclusions as to the diagnostic value of the two types of culture without paying careful consideration to these limits.

There is no mention in Dawson and Moodie's paper of this consideration. The writers give a chart of the "agglutination-titre" at various periods of the disease. It appears to be a composite chart, but the system upon which it was compounded is not very clear to me. They state that the first trace of agglutinins (with Oxford standard culture) appeared at the end of the sixth week, but since the chart shows a curve rising from the first day they must mean something else—e.g., that they failed until the sixth week to find agglutinins above the diagnostic limit (somewhere about 1/50). Adopting the same baseline for the two suspensions, they quite naturally found the first appearance of agglutinins at an earlier date with the culture of higher sensitiveness. It is not in place here to discuss the remarkably late appearance of the agglutinins in this series of tests. Other workers with standard cultures on ordinary bacillary dysentery have reported the regular appearance of diagnostic agglutination within the first week (even on the third day of the disease), and the occurrence of the maximum commonly in the third week. A similar statement is made by Shaw Bolton and Nabarro,[1] as quoted in the paper under discussion. The most probable explanation of Dawson and Moodie's

[1] Report of Board of Control, 1919 and 1920, vols. vi. and vii., appendix.

results seems to be that they made use of a technique of insufficient delicacy.

In conclusion, it may be well to state that the "normal limit" of dysentery agglutination has only been established for the "V" type of Flexner's bacillus (in addition to the Shiga bacillus). It has been assumed that it is approximately the same for the other types. Experimental proof is, nevertheless, clearly desirable, and is being taken in hand at the present time.

Summary.

(1) The different results obtained by Dawson and Moodie in their serological tests with Prof. Dudgeon's "Flexner" antigen and with Oxford standard culture depend on the fact that the strain "Flexner Gallipoli" used by Prof. Dudgeon yields suspensions of much greater sensitiveness than that of the standard cultures.

(2) Flexner Gallipoli is otherwise serologically identical with the Flexner (V) strain used in making the standard cultures.

(3) Just as specific serums give a much higher titre with Flexner Gallipoli suspensions than with Oxford standard cultures, so do normal serums.

(4) Owing to the presence of "Flexner" agglutinins in normal serums, highly sensitive suspensions are, for the purposes of clinical diagnosis, of no greater value than those less sensitive.

(5) The limit of normal agglutination of a suspension or set of suspensions must be determined before they are employed in serodiagnosis. In other words, standardised suspensions and a constant technique are essential for this work.

CASES OF

INFECTED KNEE-JOINT

TREATED BY INCISION, DRAINAGE, AND MOVEMENT.

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DURING 1912 a boy, aged 9, was sent to hospital from the country, with his knee in plaster-of-Paris at almost a right angle, which turned out to be a case of syphilitic chondro-arthritis of the knee-joint. An X ray showed clearly destruction of cartilage and sclerosis of bone in the femur. Other manifestations of the disease in this boy included tibial periostitis, husky voice, bifid uvula (from cicatricial contraction following old ulceration), nasal discharge, with destruction of nasal bridge, blocked nasal duct discharging pus into inner canthus of eye, deafness, and slight iritis. The patient was placed under good hygienic conditions and given nutritious food and tonics—i.e., cod-liver oil with the syrup ferric iodide followed by mercurial and potassium iodide treatment. After a short interval the knee-joint was explored by free incisions on either side of the patella. The diseased cartilage, which was eroded in a serpiginous manner, was scraped and sequestra removed from the lower end of the femur with the least possible interference with the epiphysis; the synovial membrane was diseased, swollen, and œdematous, and some of this granulation tissue was also removed. The joint was irrigated and rubber drainage-tubes inserted into and through the knee-joint. Continuous drainage was then applied by means of wet boric compresses covered with oiled silk, as the best and most convenient form of continuous drainage. The ultimate result of this case, as far as the knee-joint was concerned, was perfect. He was shown before the Medical Society of Halifax in 1912, with a knee-joint normal in every way, excepting for the scars on either side of the patella.

Application of Same Treatment to Septic Knee-joints.

The functional result of the above case led me to try the same kind of treatment upon septic conditions of the knee-joint. The first opportunity (in 1914) was a septic knee-joint, which followed an operation for removal of semilunar cartilage and went septic through faulty technique, with all the symptoms of acute virulent infection—with marked swelling, high temperature, pain, and septic absorption. The joint was treated in the manner already described above. After acute inflammation had subsided, passive movement of the joint was carried out; almost full flexion and extension eventually became possible.

The following two cases, one in April, 1916, the other in September, 1920, were very similar to one another in all respects, the ultimate result being a perfectly functioning joint in each case. One, a boy aged 8, fell upon a needle which pierced the joint, causing it to swell and become painful with a resulting septic knee-joint full of pus, which was opened 21 days after the accident. In the other case infection was more virulent and symptoms were more severe; this case was treated more energetically and boldly than the others, and I think responded more rapidly to treatment. The patient was a child of 4, who was stabbed in the knee-joint with a knife. This immediately resulted in all the symptoms of acute infection in the joint, acute pain, swelling, redness, heat of the part, high fever (104°), quick pulse, and symptoms of septic absorption. The joint, opened on the day following the accident, was full of sticky dark serous fluid with marked redness and injection of the synovial membrane, including cobweb adhesions in the synovial pouch above the patella, with flakes of lymph in the joint. The entrance wound was dirty-looking and sloughy. The time occupied in treatment of these two last cases was about two months; both were shown before the Halifax Medical Society in February, 1921.

Conclusions.

The conclusions I have drawn, from my observation of the above cases and from perusal of recent literature upon the subject of septic knee-joints, are that when the diagnosis is septic knee-joint, the treatment should be at the earliest possible moment a free opening of that joint by lateral incisons four to six inches long, on either side of the patella, followed by thorough irrigation of the joint, breaking down of all adhesions, manipulation by full flexion and extension, introduction of several rubber drainage-tubes about the size of the little or big finger according to the size of the patient, application over the wounds of wet boric lint covered with oiled silk, and creation of continuous drainage of the joint by capillary action. The dressing should be changed once a day with removal of tubes, irrigation, and full flexion and extension. This treatment should be repeated daily until the wounds are healed. Other observations I have made lead me to suppose that failure will occur if any of these details are not observed—i.e., if incisions are not large enough, and if the joint is not fully flexed each day, or if the dressings are not kept wet or are discontinued before the wound has thoroughly healed. The changing of dressings and movement of the joint are comparatively painless. This method of treating septic knee-joints apparently gives the patient the best chance regarding his life and the function of his limb.

Bibliography.—Willems: Medical Review, 1917, p. 233. McWilliams and Hetzel: Annals of Surgery, September, 1919. Lund: Boston Medical and Surgical Journal, 1920, p. 631. Lane, Sir W. A.: THE LANCET, 1920, i., p. 1159. Allan: Boston Medical and Surgical Journal, 1921, p. 167.

Dr. Edward Burdett Pooley and Dr. Leonard Greenham Starr Molloy, D.S.O., have been appointed Knights of Grace of the Order of the Hospital of St. John of Jerusalem in England.

DONATIONS AND BEQUESTS.—Mr. Emmanuel Shackleton, of Littleborough, left £1000 each to Rochdale Royal Infirmary, Manchester Royal Infirmary, and Dr. Barnardo's Home.—The late Sir Frank Bowden has among other bequests left £1000 to the Nottingham General Hospital.—Under the will of the late Mr. James Parkinson the Royal National Pension Fund for Nurses will benefit by a sum of more than £20,000.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF PYOCELE OF THE FRONTAL SINUS.

BY J. A. GIBB, M.D. ABERD.,

HON. SURGEON, KENT COUNTY HOSPITAL FOR DISEASES OF EYE, EAR, NOSE, AND THROAT, MAIDSTONE.

THE following case is interesting, although the recent Hunterian Lecture by Mr. W. J. Howarth has shown me that the condition is not so uncommon as I had formerly supposed.

On May 18th I was asked by Mr. G. Potts, ophthalmic surgeon to the hospital, to examine a patient, aged 57, for frontal sinusitis. She had a slight swelling at the inner canthus of the left eye, and complained of some "pricking in the left eye," but not of headache or other subjective symptom. The swelling was firm and could not be pressed away. Intranasal examination showed no discharge on either side, mucous membrane quite normal in appearance, and no enlargement of turbinate bones. Post-nasal space clear of discharge. Transillumination showed both frontal sinuses clear and of about normal size; maxillary antrum also clear; no history of a blow. My report was: frontal, ethmoid, and maxillary sinuses unaffected.

Three months after this the patient was admitted into hospital with a compressible swelling on her left frontal sinus. The house surgeon, Dr. K. Reed Hill, needled it and got pus. There were no subjective symptoms such as headache, and the temperature was negligible. The eyeball was pushed downwards and outwards with swelling of the soft tissues of the upper eyelid and inner angle of orbit.

Operation.—I operated as soon as the patient could be got ready, making an incision along the eyebrow; there was an immediate gush of odourless, reddish muco-pus. A gloved finger was inserted into the cavity, which was felt to be unusually large. I therefore made a further incision at right angles to the original at its inner angle, going well up the forehead; the flap was turned upwards and the cavity swabbed dry and all bleeding arrested.

The following was then made clear: The anterior wall of the sinus, with the exception of a thin pliable piece of bone adherent to the flap, was absorbed. The floor, except for a small plate of bone over the orbit, the posterior wall, and the septum between the two sinuses were also absorbed, so that the right frontal sinus could easily be explored; portions of dura mater were missing, red and inflamed brain substance being exposed. A probe could be passed on either side into the nose; the posterior ethmoid cells were absorbed. The fronto-nasal duct could not be made out; the probe could be passed down to the loop of the post-nasal space, the muco-periosteum everywhere being intact, except where the orbital plate had been absorbed; here the probe passed into the cheek. The sagittal sinus was intact, but the whole left frontal lobe was completely exposed and could, if it had been desirable, have been raised and its under surface explored.

The wound was sutured with the exception of its outer and inner angle, which were drained. Recovery was gradual and the temperature and pulse negligible throughout, until at the end of three weeks a pocket of pus, quite different from the original infection, formed under the scalp at the inner angle of the original incision and extended down to the cheek. This was opened, gently scraped, and swabbed out with hypochlorite solution.

The patient is now quite well. I deemed it inadvisable to open up any communication with the nasal cavities, as I felt that the cavity would become filled with fibrous tissue, the condition, in my opinion, being one of mucocele of the frontal sinus which had become infected.

Abstract of Ophthalmological Report.

Patient attended hospital on May 14th complaining of slight discomfort behind the left eye. On examination Mr. Potts found vision R.E. 6/6, L.E. 6/12; small swelling felt below left supra-orbital notch; slight proptosis and displacement of eye downwards and outwards; no diplopia. Fundus normal. On re-examination four months later the eye had returned practically to its normal position. The proptosis had disappeared, but there was very slight displacement of the eye downwards, the level of the left pupil being about 2 mm. below that of the right. Fundus, optic disc, and media normal. On testing for heterophoria the left image was found to be situated above and to the right of the right image, but they were approximately fused by a 12° prism base upwards and inwards. The extrinsic muscles appeared not to have been affected, as there was no limitation of movement of the eye. The fields showed no contraction, nor were any scotomata to be made out with either white or colours.

A CASE OF SYRINGOMYELIA.

BY W. SIBBALD ROBERTSON, M.D. EDIN.

SYRINGOMYELIA, a rare disease in this country, is usually and correctly described as slowly progressive and incurable, but remissions are not uncommon; it may be of interest to give some account of a case in which apparent arrest of the malady and disappearance of the symptoms have proved more nearly complete than can usually be hoped for or expected.

The patient, R. J., first came under my care as long ago as 1907. She was a single woman, aged 26, the youngest of a family of 16. Having in mind the accepted view of the ætiology of the disease, it may not be irrelevant to mention that her twin sister has been a normally healthy woman all her life, presenting no sign of developmental defect. The family history is good; the patient herself gave no history of nervous or venereal disease or serious illness of any kind. She cannot be described as bright mentally. In 1905 she developed a whitlow, which became so severe that amputation of the finger was ultimately performed. During the next two years she was treated in hospital on several occasions for severe—but painless—whitlows; more than once she burnt or scalded herself; in 1907 the terminal phalanges of a thumb and two fingers were painlessly removed for some septic condition. During this time, also, the patient complained of a gradually increasing weakness in her hands and arms, but the true causation of her local troubles does not seem to have been recognised.

In June, 1907, examination showed irregular distributed patches on her arms, hands, feet, chest, face, and upper part of her lower limbs, where sensations to pain and to heat and cold were completely absent, although tactile sensation was unaffected (dissociated anæsthesia). There was marked muscular atrophy of the thenar and hypothenar eminences, with fibrillary muscular tremors and diminution in the faradic response; there was also extreme left-sided hemi-atrophy of the tongue. The patient complained of frequent shooting pains, sometimes of a girdle character round the trunk, but oftenest of an anginous type, running from the præcordia up the neck and down the arm; the hands were blue and cold, and the patient suffered from—or at least developed—numerous chilblains; her nails were cracked and furrowed, and she was very subject to fainting fits and had constantly a rapid, low-tension pulse. Her knee-jerks were increased, and she had difficulty in walking. The plantar reflexes were normal. Her speech was hesitating and staccato, and she was subject to dribbling of saliva from the mouth. The stereognostic sense was apparently normal, and the pupils, spine, and joints were unaffected.

Treatment.—The treatment adopted was purely symptomatic; regular courses of Easton's syrup and of tonics containing nux vomica, strychnine, and iron and the like were given; the pain was relieved with phenacetin, antipyrin, bromides, &c., and (when the attacks were exceptionally severe) morphia; regular action of the bowels was secured, and strophanthus was given to counteract the circulatory weakness.

At first the progress of the case was as expected. The general condition and all symptoms became gradually worse, and during the whole of 1908 and 1909 she was altogether bedridden. In 1910 improvement set in, her nails (which she had had no occasion to cut for years) began to grow, her tongue increased in size, her speech improved, walking became possible, and her heart and circulation gradually recovered tone. Since January, 1911, she has done all her housework unaided, and has had no further whitlows or traumata of any kind.[1]

Examination in September, 1921, showed her speech to be normal and her gait almost so; the knee-jerks remain slightly exaggerated and there are still some patches of dissociated anæsthesia on her soles. But in all other respects she appears healthy, able to live a fairly busy and useful life.

The diagnosis of the case presented but little difficulty; but it was more than once missed by

[1] The patient was shown at a meeting of the B.M.A. at Scarborough in 1911.

observers who concentrated their attention on local lesions. Of much more interest is the unlooked-for amelioration in all the symptoms and the long period of time over which the improvement has been maintained. Remissions for a dozen years or longer have been reported, but I have failed to trace any instance in which a case so apparently desperate achieved what may at present pass for almost complete recovery and natural arrest of the disease.

West Ayton, Yorks.

PARA-URETHRAL GONORRHŒA.

BY F. CHAMBERLAIN, M.R.C.S., L.R.C.P. LOND.,
HOUSE SURGEON TO THE LONDON LOCK HOSPITAL.

A para- or accessory urethra is a small blind canal lying somewhere between the meatus urinarius and the penile-scrotal junction in the long axis of the penis. The canal opens at the distal end but is closed at the proximal end and does not communicate with the urethra proper. The lining is of epithelial cells supported by connective tissue, indistinguishable in form and arrangement from those lining the urethra, a small bore urethra in effect. In most cases the urethra is of narrow calibre and one gains the impression that the condition is due to a developmental error whereby a portion of the urethral track is cut off from the main urethra.

In certain cases these canals may become infected with gonococci, the urethra proper escaping. I hazard the theory that the cause is largely mechanical. In Case 1 the extreme phimosis must to some extent have protected the meatus urinarius, while the opening of the canal on the under surface of the prepuce would bear the brunt of the onslaught during coitus. In Case 2 the three openings were close together, but the meatus was very narrow, hardly admitting an 11 F. bougie, and the lips were indrawn, presenting the resistant skin surface of the penis instead of the delicate lining of the urethra. Distension of the glans during erection rendered the para-urethral openings more prominent.

CASE 1.—Aged 23, no previous venereal disease. Marked phimosis; had never been able to retract foreskin. Narrow meatus; an ovoid swelling, 12 by 6 mm., on the under surface of the penis with pus exuding from four openings. A fine probe passed through the distal opening demonstrated a canal 3 cm. in length lying superficially in the raphé. Pus contained gonococci. Urine was limpid and contained no flakes.

Treatment.—The canal was dissected out and the edges sutured. Healed by first intention. Three months later a faint scar was discernible; there had been no signs of urethral gonorrhœa.

CASE 2.—Aged 23, no previous venereal disease. Three days after coitus noticed a "boil" on the glans. This was treated with foments and later with various ointments till another boil arose and the end of the penis became impetiginised. On examination a pocket 3 mm. in depth was found, and proximal to this a canal 3¼ cm. in length, starting 6 mm. from the meatus and passing from the glans, through the frenal fold, and on to the prepuce to the skin-mucus junction.

Treatment.—The septum between the pocket and the canal was perforated and the whole track laid open with a pair of iridectomy scissors and packed with acriflavine gauze; the wound healed, leaving a ribbon-like track. Two months later the track was hardly distinguishable from the rest of the penis. There had been no signs of urethral gonorrhœa; gonococci were found in the original discharge from the canal.

CASE 3.—Mr. J. E. R. McDonagh has given me permission to include a case in which the track extended almost the whole length of the raphé and the pent-up pus had made its way to the surface by several openings. Gonococci were found in the pus; no signs of urethritis then or since. The track was dissected out and the wound sewn up. No trouble since.

It is important to recognise that these ducts can be infected without any signs of "gonorrhœa," as, by the time the patient has maltreated his penis with irritating ointments to cure his "sore," the original lesion will be quite unrecognisable, and there is no urethral discharge to give one a lead. Hot dressings and ointments will then be of no avail.

I am indebted to Mr. McDonagh and Mr. Johnston Abraham for permission to publish these cases.

A FATAL CASE OF DELAYED NEO-SALVARSAN POISONING.

BY D. R. C. SHEPHERD, M.B., M.R.C.P. LOND.,
TEMP. CAPTAIN, R.A.M.C.; MEDICAL SPECIALIST, ALDERSHOT COMMAND.

DEATH due to the means of cure of syphilis is by no means rare, but in the case here recorded death occurred 111 days after the last of seven injections of neo-salvarsan.

J. G., a soldier, aged 21, commenced treatment on Sept. 9th, 1920, after the *Spirochæta pallida* had been found in his primary sore. The following is an extract from his case sheet showing the dosage employed:—

Connaught Hospital, Aldershot.

10/9/20	 914	.... 0·4 g.	.... Hg. gr. 1.
17/9/20	 914	.... 0·4 g.	.... Hg. gr. 1.
24/9/20	 914	.... 0·4 g.	.... Hg. gr. 1.
1/10/20	.. .. .. —	.... —	.... Hg. gr. 1.
8/10/20	 914	.... 0·6 g.	.... Hg. gr. 1.
15/10/20	 914	.... 0·6 g.	.... Hg. gr. 1.

Rochester Row.

29/10/20	 914	.... 0·6 g.	.... Hg. gr. 1.
5/11/20	 914	.... 0·6 g.	.... Hg. gr. 1.

He reported sick with jaundice, but no other symptoms on Feb. 6th, 1921, and was admitted to the Cambridge Hospital, Aldershot, on that day. So-called catarrhal jaundice is common in the command, and his case presented no peculiarity until the 22nd, when he became depressed and refused food; vomiting set in, the jaundice deepened, and he died comatose in 36 hours. The urine on the day of death contained albumin, blood, and bile-stained granular casts. It showed the presence of arsenic by Marsh's test. Leucin and tyrosin were absent. Post mortem, the liver weighed 30½ oz., and showed the typical appearance of acute yellow atrophy both macroscopically and microscopically. The kidneys showed acute diffuse nephritis and there was some venous congestion of the spleen. The other organs were apparently healthy. No spirochætes were found in films of juice from liver and kidney.

Analysis by Major Elliot, B.Sc., F.C.S., gave the following result:—

	Weight in grammes.	As. per 100 g.
Kidneys	391	0·02 mg.
Liver	832	0·1 mg.
Spleen	241	0·2 mg.
Bone	19	0·2 mg.

Mr. A. G. R. Foulerton tells me that the relative amounts (if the liver and kidneys are considered together) agree closely with his findings in experimental As_2O_3 poisoning. A rough estimate shows that probably nearly one-tenth of the total arsenic administered remained in the body at death. The elimination of arsenic from organic combinations is, I find, a longer process than is usually believed. Three patients free from symptoms were found recently to have arsenic in the urine in demonstrable quantity 11 weeks after their last injection of neo-salvarsan.

I have not been able to find any other record of analysis of the arsenic concentration in so remote a fatality as the above, for permission to publish the details of which I am indebted to Lieut.-Col. H. C. R. Hine, commanding the Cambridge Hospital.

MEDICAL GOLFING SOCIETY.—This society has been carried on in a more or less informal manner for 23 years, but it has now been decided to put it on a business footing. Two tournament meetings are to be held annually, and team matches and other competitions for four cups, including two challenge cups, will be arranged. Membership, without election, is open to any gentleman on the Medical Register, on payment of the annual subscription of 10*s.* to the hon. secretary and treasurer, Dr. Rolf Creasy, jun., 36, Weymouth-street, London, W. 1.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

A MEETING of this section of the Royal Society of Medicine was held on Dec. 7th, Mr. RAYMOND JOHNSON, the President, being in the chair.

Sir CHARLES BALLANCE read a paper on

Ligation of the Innominate Artery for Innominate Aneurysm.

Four of his own cases were described.

CASE 1.—Female, aged 60 years, who had had syphilis. She had deformed tibia and an old iritis. There was a pulsating expansile tumour rising from the superior mediastinum above the inner extremity of the right clavicle and the suprasternal notch. Radiographic examination showed that the aneurysm was limited to the upper portion of the innominate artery. The pulses in the right arm and right carotid were markedly weakened. As there appeared to be a portion of the innominate artery not implicated in the aneurysm, it was decided to explore the mediastinum, and tie the proximal portion of the artery. This was done on Dec. 31st, 1918. The aneurysm was reached through a median vertical incision, in the lower part of the neck, with a transverse incision across the upper part of the sternum. The muscles were detached from the inner part of the left clavicle and the left portion of the manubrium, and the inner extremity of the left clavicle, together with the left upper portion of the manubrium, were removed. The pleura was pressed away and the upper part of the arch of the aorta found by dissection in the fibro-fatty tissues of the mediastinum. The proximal unexpanded portion of the innominate artery was then easily traced and ligatured with two strands of kangaroo tendon tied in a stay-knot, without rupturing the inner coat. Pulsation in the aneurysm ceased at once. The wound healed by first intention, and in six weeks' time the aneurysm had shrunk much in size and become solid. The right arm was troublesome at first, being cold and painful, but improved slightly, although pulsation could not be detected in any vessel. In January, 1921, the right arm had completely recovered, the two radial pulses being equal. A large vessel felt crossing the right posterior triangle of the neck was thought to be possibly an enlarged transversalis colli artery. In May, 1921, the patient was readmitted to St. Thomas's Hospital with severe albuminuria, ascites, and œdema with cardiac complications. She died on June 6th, 1921. The autopsy revealed a large infarct in the lung which was the immediate cause of death. The large vessels at the root of the neck were dissected out and distended under pressure. Sir Charles Ballance showed the specimen; the artery was obstructed at the site of ligature, the aneurysm had disappeared, its remains being a mere fibrous mass. The greater part of the right subclavian artery was patent, and circulation had apparently been re-established through the branches of the first part of that vessel. The transversalis colli was not enlarged as had been supposed.

CASE 2 was reported fully in THE LANCET, 1902, II., p. 1180. Sir Charles Ballance recalled its salient features. The patient was a man, aged 35 years. The aneurysm involved the bifurcation of the innominate artery and extended some distance into the right side of the neck. The patient had previously undergone a course of Valsalvian treatment. The proximal portion of the innominate artery was exposed on this occasion by dividing the manubrium vertically in the middle line, and transversely at the level of the upper border of the second costal cartilage. This portion was tied with four ligatures of goldbeater's skin tied in two stay-knots. The patient died 30 hours later, after exhibiting signs of a left hemiplegia. At the autopsy the great vessels were removed and preserved. The right common carotid, internal carotid, and middle cerebral arteries were found full of clot.

CASE 3 (a case previously reported in 1912 to the Clinical Section of the Royal Society of Medicine).—In a clerk, aged 43 years, the aneurysm involved all three parts of the right subclavian artery. Sédillot's operation was attempted, but abandoned on discovering the nature and extent of the aneurysm. The upper portion of the manubrium was then removed and the innominate artery exposed and tied in a stay-knot with kangaroo tendon. Pulsation in the aneurysm ceased at once. The right arm was very little affected and the tumour slowly decreased in size. The patient could, unfortunately, not be traced subsequently.

CASE 4.—A man, aged 35 years, who had had syphilis seven years before, seen in 1909 on account of a large and increasing pulsating swelling in the right side of the neck, diagnosed as aneurysm of the bifurcation of the innominate. As the condition was progressing in spite of rest in bed, it was decided to operate. A portion of the manubrium was removed, together with portions of the left first and second costal cartilages, and the proximal portion of the innominate artery exposed. As the ligature was about to be passed the aneurysm, which was being pushed aside by the fingers, ruptured. Sir Charles Ballance controlled the hæmorrhage by passing his fingers into the aneurysm and plugging the innominate, and the vessel was tied with kangaroo tendon and a stay-knot. The patient died 30 hours later, and the specimen was not obtained.

Surgical Aneurysm of the Innominate.

Sir CHARLES BALLANCE showed a specimen (No. 1507) from St. Bartholomew's Museum as typical of surgical aneurysm of the innominate—i.e., one involving the bifurcation of the artery whilst the proximal portion remained unexpanded and available for ligature. Anatomically speaking, ligation of the innominate artery should be a cervical operation, but from a practical point of view it was advisable to remove bone so as to obtain a clear and free exposure of the parts. The amount of bone to be removed varied with different cases. He had found the operation not very difficult, although he would not go so far as the late Sir W. Mitchell Banks in describing it as a "mere surgical amusement." In 1915 Thomson ("Annals of Surgery," vol. lxi.) had collected 52 cases of ligation of the innominate for subclavian aneurysm with 16 recoveries (30·7 per cent.), and five further cases had since been reported, with two deaths, whilst in one of the non-fatal cases pulsation reappeared in the aneurysm in three weeks. Sir Charles Ballance wished particularly to emphasise the following points:—

1. That cases about to be submitted to operation should not be previously treated by the method of Valsalva.

2. That there was a group of cases of aneurysm of the innominate artery (aneurysm of the bifurcation) which were suitable for proximal ligature. Distal ligature caused the aneurysm to become a diverticulum of the aorta and so increased the pressure within it, and should not be done when proximal ligature was possible.

3. That the presence of the aneurysm necessitated removal of a part of the manubrium in order to gain a free and clear exposure of the vessel below the aneurysm.

4. That the ligation of the innominate might be safely and surely accomplished if the ligatures were tied in a stay-knot without rupturing the coats.

Sir Charles Ballance added that the tension in the wall of a vessel varied with the size, thus explaining the prevalence of aneurysm in the aorta and other large vessels. The tension in the large vessels was much greater than could be explained merely on the grounds of the higher blood pressure in them. When a fusiform dilatation occurred the tension in the wall of the vessel was still further increased, thus explaining the tendency of aneurysmal swellings to progress. The same factor occurred in steam pipes, and lack of recognition of the influence of the size of the vessel on the tension within it frequently led to bursting of the larger boilers in the early days of steam power.

Discussion.

Sir CHARTERS SYMONDS said he also had ligatured the innominate artery. The case had not been published, although a brief account of it could be found in Jacobson's "Operations of Surgery." The case was one of aneurysm of the second and third parts of the subclavian. The first part of the vessel was exposed by a cervical incision and two attempts made to ligature it, both of which caused severe hæmorrhage. He then decided to ligature the innominate artery, which he was able to do from the neck without removal of bone by making gentle traction on the common carotid artery. Mild suppura-

tion occurred, and several pieces of catgut and one of silk were discharged from the wound, but the patient made an excellent recovery. The aneurysm became quite hard. He had also ligatured the right subclavian and common carotid arteries for aorta aneurysm causing pressure on the trachea. The patient was relieved.

The PRESIDENT inquired why Sir Charles Ballance used kangaroo tendon.—Sir CHARLES BALLANCE replied that he had found that kangaroo tendon remained unabsorbed for 80–90 days, a period which could not be obtained by any method of preparing catgut.

Sir G. LENTHAL CHEATLE described

A New Operation for Inguinal Hernia.

Several cases in quick succession presenting difficulties in the efficient excision of the sac had led him to devise a new method by which these and other troubles could be easily and successfully dealt with when they arose. He approached and reached the back of the inguinal canal from a middle-line incision in the lowest part of the abdominal wall. Unless compelled by some complication he did not open the general peritoneal cavity, all the work being done in a space made in the subperitoneal tissue. He had operated in this way upon 41 patients. In the first nine all the incisions were longitudinal; in the remainder he had traversed the abdominal walls by Pfannenstiel's method.

The patient was placed in the Trendelenberg position and the operator stood on the side opposite the hernia. A transverse skin incision 4 or 5 inches long was made 1½ inches above the symphysis pubis, with its centre in the middle line. A similar incision was made in the aponeurosis of the rectus abdominis of both sides, care being taken not to injure either linea semilunaris. The linea alba was undercut upwards and downwards to within one or two inches of the umbilicus and to the symphysis; in doing so the sheath of each pyramidalis muscle would be opened. The opening thus made in the aponeurosis was retracted up and down, and the subperitoneal tissue exposed by separating the abdominal muscles in the middle line. The peritoneum and its contents were then pushed up on both sides, and, if necessary, kept up by packing. Two retractors were inserted on the side of operation. The retractors should have long, separate and blunt prongs. The lower retractor, by far the most important instrument in the operation, should pull the abdominal wall downwards, outwards, and forwards to lift up the abdominal wall. Its prongs should reach the deep epigastric artery and vein. Nobody should proceed with the operation until he was satisfied that this retractor was in its proper position. The upper retractor pulled the structures outwards. After more completely pushing upwards the outer part of the peritoneum and thoroughly exposing the iliac fascia it would be possible to see the neck of the sac entering the inguinal canal. The deep epigastric artery and vein were then delimited and separated from the inner part of the neck of the sac. Cheyne's dissector was a very useful instrument to use for this purpose. The spermatic veins and vas deferens with its vessels were found and separated from the whole length of the exposed sac. These structures were usually on the outer and under surface of the sac. The sac having been cleared it was pulled out of the canal by gentle continuous traction in the direction in which it lay. If there were no indications of the possibility of its easy extraction the sac was cut and the canal portion replaced. (Congenital herniæ would belong to this type.) The neck of the sac, including part of the parietal peritoneum, was then transfixed and removed. Finally the inguinal canal of the opposite side was examined, and if abnormalities existed they were treated on the same lines. He had only once had to ligature a vessel in the subperitoneal space, and that was a small branch of the deep epigastric vein.

Sir G. Lenthal Cheatle then described the complications and structures with which he had met, the herniæ he would avoid, and the herniæ he would select for this operation. He had found and removed unsuspected and potential hernial sacs from the opposite side in three patients. In others he had cleared from the internal opening of the canal firmly attached dimples of the parietal peritoneum. In others he had removed fibrous cords that passed from the parietal peritoneum into the canals. In one patient the urinary bladder occupied the canal and was practically a part of the neck of the sac. The peritoneum was peeled from the bladder and the sac was radically excised. When he met this complication again he would distend the bladder with fluid. This would render the separation of the peritoneum safer and easier. In seven cases he found the urachus which bore the same relation to the sac as the bladder. The urachus was traced to its union with the bladder: it contained a good deal of unstriated muscle, very tortuous patent arteries, and some fat. In a few patients he had traced adhesions between bowel and sac, and omentum and sac into the general peritoneal cavity which he had been compelled to open to clear them satisfactorily away. The herniæ in these instances appeared to be reducible before operation. The obliterated hypogastric artery was recognised in the sac in three cases. In one of these the lumen of the vessel was not obliterated at the point of section. Sir G. Lenthal Cheatle said that from one patient he removed a small sac entering the canal, and missed a much larger one that was plastered against the iliac fascia and outer part of the inguinal opening. It was this mistake that made it so essential to expose the iliac fascia. In another patient he had the following unfortunate experience. He had removed the sac on the left side and found an unsuspected sac entering the internal ring on right side. He congratulated himself on removing these two sacs from the same opening. In six weeks the patient returned with a direct hernia on the right side. Rightly or wrongly, he associated his operation with this new hernia, and determined to take Mr. Victor Bonney's advice and adopt Pfannenstiel's method of traversing the abdominal wall. As an unusual complication Sir G. Lenthal Cheatle mentioned that through the same opening he had removed an appendix from a patient who suffered from appendicitis and inguinal hernia.

The herniæ he would *not* select for this operation were direct hernia, irreducible enteroceles, hernia in male children under 7 or 8 years, and old herniæ in which the opening has been dragged down opposite the external ring. The herniæ he would select were those in females of any age, and all uncomplicated inguinal herniæ in males over 7 or 8. He would not exclude irreducible epiploceles. He had approached femoral herniæ by the same method, but the cases were too recent to be quoted as successes as yet.

Mr. MCADAM ECCLES inquired whether the patient should be regarded as cured by mere excision of the sac.—Mr. PHILIP TURNER said that he considered excision of the sac cured almost all herniæ, with only a few rare exceptions. In his practice he now restricted the operation to excision of the sac, except in cases of obvious weakness of the abdominal wall. This he had been led to do by the success of that operation in children, and he now considered it equally successful in adults. Sir G. Lenthal Cheatle's operation had the great advantage of rendering both inguinal regions accessible, and he intended to give the procedure a trial at the earliest opportunity.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.

THE ordinary quarterly meeting of this Association was held at the rooms of the Medical Society, London, on Nov. 22nd under the presidency of Dr. C. HUBERT BOND.

Dr. BEDFORD PIERCE, the chairman of the committee who have been revising the Handbook on Mental Nursing, presented to the meeting the revised handbook, setting out the improvements which had been effected. The cordial thanks of the meeting were accorded to the committee for their labours.

Dr. M. HAMBLIN SMITH, medical officer, H.M. Prison, Birmingham, read a paper on

The Medical Examination of Delinquents.

He said that John Howard's book on prisons in the eighteenth century showed that the medical side of prison administration was, at that date, practically

non-existent. Though many of the prisons had a surgeon attached to them, he seemed to have come in only when specially required. For many years past, however, every prison had had a regular M.O. as part of the establishment, and his duties and functions had undergone remarkable developments. Our larger prisons were well built and well equipped, and the nursing staff had altered for the better. The M.O. had opportunities, especially in the case of long-term prisoners, of observing the effects of diet and work, as well as watching the development of various forms of disease. Dr. Smith said that various physical ailments conduced to delinquency, in so far as they affected the mental life. For example, a man suffering from such a physical defect as hernia, tuberculosis, or defective vision, was handicapped in earning his living in the competitive labour market, and hence was more likely to break the law. Those physically defective from cardiac or phthisical disease were unable to work regularly, and thus did not form, early in life, good habits of industry; moreover, the physically weak child was often kept away from school and thus not only formed bad habits early, but received more than the usual sympathy. A boy with defective vision would be a constant trouble to his teachers, who, ignorant of the defect, would punish undeservedly, producing in the child a mental conflict which might result in delinquency. This contingency was now largely prevented by the present system of school inspection. Moreover, the tendency of certain physical disabilities was to make their victims anti-social, owing to the feeling that they were not as others. The duties of the prison doctor soon grew beyond the mere treatment of physical ills; no uniformity could be carried out in the way of diet, work, and disciplinary punishment, and the doctor was constantly being called upon to exercise discretion.

There had been a great development, too, in the mental side of his work. Probably this was originally confined to certification of cases of legal insanity; prisoners were held to be either normal or insane, in a rigid sense. But a man, though not insane, might have a mentality differing from that of the strictly normal person, and these abnormal cases were now placed under the medical officer's direct charge, and could now be certified under the Mental Deficiency Act, 1913. No rigid division between normal and insane prisoners was possible; every offender presented an individual problem. Public opinion was probably not yet ripe for universal investigation of individual cases, though the courts and the public should be educated up to the need thereof. Dr. Smith said he had devoted much time to the selection and application of a scheme of tests. His earlier work was done with the Binet scale, but he became dissatisfied with that scheme, and moreover was not satisfied as to the propriety of the fashion of considering "mental age." He was dealing with the test he now used in a book shortly to be published. Much light had been shed on problems of delinquency by the so-called new psychology. He was not saying that there was always a mental conflict at the root of delinquency, or whether such conflicts were always of a sex character. But he felt certain that such a conflict was present in many cases, and the discovery of this might alter the whole aspect from which the particular offender was regarded. He thought a scheme would need to be devised for the placing of suitable cases under the care of official psycho-analysts. At Birmingham the prison doctor was an integral part of the city's scheme for dealing with its delinquents. Dr. W. A. Potts had been appointed to examine cases which it was not desired to send to the remand part of the prison. The male and female remand departments were arranged and worked, as far as possible, on hospital lines, the idea of prison being kept out of sight. Dr. Smith proceeded to describe the routine followed. It was now very rare to get a mental defective or a psychosis case from the city of Birmingham on conviction. He advocated the division of the country into convenient districts, each having a properly equipped prison with a special M.O. in charge, to which all cases requiring mental examination should be sent. The only alternative plan would be to have travelling mental examiners in each district, who could attend when required. His conclusion was, that uninvestigated offenders were the most expensive luxury that any community could indulge in. He thought there should be a closer union between the prison and asylum services; there might be a unified service, working in each district under a local head, who would be the director and inspirer of the work. Dr. Smith then detailed the requirements which psychiatrists for this work should possess, and referred to the intention of the University of Birmingham to hold, next summer, an intensive course of lecture-demonstrations. He alluded, in conclusion, to the valuable work of the school medical officer.

Discussion.

Dr. W. A. POTTS confirmed Dr. Smith's opinion that every offender was worthy of investigation, and that this would prove in the end an economical procedure. He alluded to the importance, in doubtful cases, of an examination before the supposed offender was sent to prison, in order to preserve his self-respect.

Dr. J. T. DUNSTON (Commissioner of Mentally Disordered and Defective Persons of South Africa) spoke of a recent visit to New York State. There each person sentenced to imprisonment for a year or more went through a thorough medical examination. A beautifully-fitted reception prison was being built, and next to it a large medical institute, under the stimulus of the National Committee for Mental Hygiene. So far, the work had been done, under some difficulty, by Dr. Glueck. After the medical examination each case was examined by a psychologist, who had to decide whether the prisoner was defective, or mal-adjusted, or actually insane. If normal, the man was recommended the right vocational training or treatment. Hence every felon's fate was decided not by the magistrate, but by the examining psychiatrist. In Chicago every juvenile delinquent was examined by a psychiatrist, who sat beside the judge as assessor, and made a rapid diagnosis. In Massachusetts, however, a most detailed personality study was made. In America the prevailing view seemed to be that it was the individual who really mattered, not the crime.

Mr. A. H. TREVOR (Commissioner of the Board of Control) said it was impossible to hear what was being done in Birmingham and in America in keeping defective persons out of prison without sympathising with such efforts to the full.

Sir ROBERT ARMSTRONG-JONES spoke of an effort now being made to found a Magistrates' Association, one object of which would be to secure greater uniformity in the dealing with similar offences in the various districts.

Dr. H. DAVIES JONES read a paper on

Forgetting.

He explained that he was not attempting to deal with the complete amnesias met with in the practice of psycho-analysts. Freud claimed that forgetting, whether for words or deeds, was not a fortuitous occurrence, but that a reason could usually be revealed by psycho-analytic methods. A means of gauging the value of an amnesia was the emotional effect accompanying. Dr. Davies Jones spoke only of cases where a sufficiently deep impress had been made. Forgetting was not a passive but an active process; we forgot, because we did not wish to remember, something unpleasant because it clashed with our innate tendencies. Each time the undesired memory recurred an attempt to repress its expression was made, and eventually the repression would become a part of the unconscious self. Still, it possessed a latent energy which could not be destroyed, and expression would occur by devious routes. Psycho-analytic

methods enabled a better adjustment to be made. To achieve this Freud employed the method of free association. Dr. Davies Jones quoted cases to illustrate his thesis.

The paper was discussed by Dr. JAMES STEWART, Dr. C. STANFORD READ, Dr. BEDFORD PIERCE, and Dr. A. E. EVANS, and Dr. DAVIES JONES replied.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held at the West London Hospital on Dec. 2nd, Sir G. LENTHAL CHEATLE, the President, being in the chair, when a discussion on

The Treatment of Puerperal Infection

was opened by Dr. FREDERIC J. MCCANN. He compared the nature of puerperal infection with that of ordinary septic wounds. The normal sequence of events in a healthy puerperium was attained chiefly by the increased vascular and lymphatic supply of the involuting uterus. Dr. McCann emphasised the importance of wounds of the cervix, vagina, and vulva as sources of infection, and criticised the orthodox teaching that infection usually originated within the uterus. After alluding to the modes of spread and the general course of the infection, he proceeded to discuss the importance of prophylactic measures. He deplored that our hospital system provided such scanty accommodation for puerperal cases. The teaching of obstetrics also should be improved. Medical officers of health should be empowered to admit to hospital women whose domestic surroundings were unsuitable for a confinement. The application of forceps and the introduction of the hand into the uterus should be regarded as major operations. Rectal examination should be avoided; its disadvantages were obvious. Vaginal and perineal wounds and deep cervical tears should be carefully cleansed and sutured. With regard to the treatment of infected cases, in the first place extra-genital sources of infection must be excluded. Exploration of the uterus was only permissible in the severer types of cases or after any likely source of infection in the lower genital tract had been excluded. The curette should be used as a probe only or for gently removing any loose fragments, and never as a scraper. Puerperal peritonitis and localised abscesses must be dealt with on ordinary surgical lines. Subcutaneous salines, free purgation, and the judicious use of quinine were all valuable. Serum and vaccine were, on the whole, disappointing.

Discussion.

The PRESIDENT warned practitioners against placing too much reliance on the alleged antiseptic properties of many gauzes on the market.—Dr. REMINGTON HOBBS was strongly in favour of uterine drainage, as, in his opinion, the rise of temperature was due to mechanical blocking of the uterine outlet by malpositions of the uterus, œdema of the cervix, and overloading of the rectum. For this purpose he used a small rubber catheter. After cleansing the genital passages the catheter was introduced into the uterus by means of a special forceps made to his design. 10 c.cm. of a glycerine and iodine mixture (in the proportions of 7 to 1) were then injected into the uterus. It might be necessary to repeat this injection on several consecutive days according to the course the temperature took. He showed a series of temperature charts which appeared to bear out the efficacy of this line of treatment.—Dr. H. J. F. SIMSON referred to the importance of prophylaxis, and wondered to what extent the glycerine was responsible for the success of Dr. Hobbs's treatment.—Dr. KNYVETT GORDON stated that an experience of 250 cases had led him to believe that the best line of treatment was curettage, saline infusions, and the use of anti-sera (according to the bacteriology) in large doses combined with saline. Laparotomy and even hysterectomy were indicated in the severer cases.—Dr. BERNARD SPILSBURY referred to the severe type of case usually seen by him; in some of these cases death occurred as early as 24 hours after infection. There was in these cases little macroscopic evidence to account for the infection.—Dr. J. BURNFORD laid stress on the importance of bacilluria as a cause of fever during the puerperium. Bacteriological examination of the urine should be a routine procedure in puerperal cases associated with pyrexia.

Other speakers included Mr. MALCOLM DONALDSON, Dr. LAPTHORN SMITH, Dr. VAUGHAN PENDRED, Dr. SANGUINETTI, and Dr. F. G. LLOYD.—Dr. MCCANN replied.

PATHOLOGICAL SOCIETY OF MANCHESTER.

A MEETING of this Society was held on Nov. 9th, with Mr. J. HOWSON RAY, the President, in the chair.

Dr. C. P. LAPAGE opened a discussion on

Tuberculosis in Children.

He pointed out the frequency of tuberculous infection in children, as shown by: (1) Post-mortems at the Children's Hospital, Pendlebury. These showed the great frequency of glandular tuberculosis, in many cases without disease of the organs. They also showed that cavitation of the lungs in babies is not uncommon. (2) X ray examinations to demonstrate thoracic tuberculosis. (3) The results of the Von Pirquet skin reaction in 1000 children, as demonstrating the incidence of non-fatal tuberculosis in the age-periods of childhood. (2) and (3) were correlated to the clinical examination and the close correspondence between the three methods of examination pointed to the fact that tuberculosis in its early stages should be recognised by symptoms and history rather than by physical signs. One thousand cases were divided clinically in five categories—i.e., negative, possible, suspicious, probable, and positive. Even the suspicious cases had no physical signs, but only pallor and debility, some loss of flesh and an indefinite cough, in some cases with a history of infection in the home. These were often tuberculous and when tested with the Pirquet test at the different age-periods, gave results as follows: 0–2, 5 per cent.; 2–5, 62 per cent.; 5–10, 67 per cent.; 10–14, 59 per cent. Dr. Lapage discussed the frequency of tuberculosis and its variability in different areas in relation to the milk-supply, and concluded that, though infection from human sources is much the more common and more dangerous, yet the danger from tuberculous milk is a very real one, especially when the likelihood of massive doses is present. The autopsies seemed to show that the tubercle bacillus could pass through the damaged mucous membrane and clinically this seems possible, especially if some illness such as chronic enteritis or bronchitis lowers the health of the child and produces local inflammation and perhaps stagnation. Closed or open disease results. In some cases there is a marked bacillæmia resulting in generalised tuberculosis. In others, tubercle bacilli are disseminated to various parts of the system where they may remain latent; then at some subsequent period of lowered health with perhaps local injury, they may be lighted up and form isolated areas of disease, such as nodules, or joint or bone trouble. The mode of spread is, however, more often by the lymphatic system. Tuberculosis was a very fatal disease, especially in young children, the death-rate falling very rapidly after the second year—i.e., 25 at 0–1 year, rising to 40 at 1–2 years, and falling to 20 at 2–3 years. A great deal of non-fatal tuberculosis occurred, but Dr. Lapage said that every effort should be made to postpone infection as late as possible on account of the very high death-rate at the early age.

Mr. E. D. TELFORD discussed the subject from the surgical aspect. His figure for bovine infection in Manchester was 50 per cent., the route of infection being as a rule via the digestive tract. The average age of clinical onset in a large series was 3½ years,

from which he deduced a fairly long latent period after the original infection. In younger infants tuberculosis tended to be more acute and more generalised. Mr. Telford discussed the sites of surgical tuberculous disease and the influence of injury and pre-existing simple disease in determining the site of tuberculous infection later. The different types of cold abscesses and the results of aspiration were given. The effects of rest were discussed with special reference to the operative fixation of joints as opposed to formal excision. Finally some points were mentioned regarding the prognosis and ultimate fate of the healed cases.

LIVERPOOL MEDICAL INSTITUTION.

A MEETING of this Institution took place on Dec. 1st, Dr. J. E. GEMMELL, the President, in the chair.

Dr. W. JOHNSON read a short paper on the Diagnostic Value of the Vibration Sense. He pointed out that the work of Dr. J. L. M. Symns and Dr. E. J. Wood, in the Guy's Hospital Neurological Department, by establishing a quantitative method of estimating the sensation, had rendered the investigation of the vibration sensation at the bedside feasible. The tuning fork devised by Dr. Symns for the purpose was demonstrated. By means of it, it is possible to show the presence of a definite diminution in the vibration sense in certain nervous diseases before the cutaneous forms of sensibility show any loss. Thus the observation assumes clinical importance in the early stages of tabes dorsalis, peripheral neuritis, and lesions involving the sensory paths in the spinal cord. The point was emphasised that in cases where cutaneous sensory loss is definite, investigation of the vibration sensation is comparatively unimportant.

Mr. J. H. RAWLINSON read a paper on some Genito-Urinary Cases, drawing attention to frequent errors in diagnosis, and for their avoidance emphasised the importance of thorough investigation of the urine and catheterisation of the ureter. He contrasted the symptomatology of tuberculous pyelitis with septic pyelonephritis, the latter being more often bilateral than the former. He referred to treatment by lavage of the renal pelvis through a urethral catheter and discussed the treatment of bleeding after prostatectomy. He stated that 75 per cent. renal stones passed spontaneously and that *Bacillus coli* occurred in more than 50 per cent. of cases of pyelitis.

ULSTER MEDICAL SOCIETY.

A MEETING of this Society was held on Dec. 1st, Dr. ROBERT HALL, the President, being in the chair. The business of the meeting was

A Discussion upon the Wassermann Reaction.

Dr. J. C. RANKIN introduced the discussion, and Dr. J. A. SMYTH gave a short demonstration of the various methods of doing the test.

Dr. THOMAS HOUSTON read a paper, illustrated by lantern demonstrations, which consisted in the analysis of over 5000 Wassermann tests done by two different methods: (1) that of Colonel L. W. Harrison, and (2) that practised by Dr. Alexander Fleming of St. Mary's Hospital. The work had been done in the laboratory of the Royal Victoria Hospital by Dr. Norman Graham, Dr. George Rea, Dr. Smyth, Dr. Boyd Campbell, and himself. This analysis showed exact agreement in the results of the two tests in the vast majority of the determinations, but in 472 (or 9 per cent.) there was some difference in the readings of the two tests. These differences were further analysed and divided into diagnostic differences and differences occurring in treated cases where the tests were done for the purpose of controlling treatment. 25 per cent. of the differences occurred in cases where diagnosis was required, so that, making allowance for slight differences of degree, in about 1 per cent. of all the determinations a difficulty might arise as to which test gave the correct diagnosis. On further analysis it was shown that Fleming's method was more sensitive both in diagnosis and treatment cases, and had on several occasions given a correct finding where Harrison's method was at fault. The great drawback to Fleming's method was that in 10 per cent. of the bloods no hæmolysis took place in the control tube, and the result could not be read without repeating the test by adding fresh control serum. The reading of this test was often difficult and required considerable experience. It was therefore hardly to be recommended as a single test, but its advantages when done in conjunction with one of the other tests recommended by the Medical Research Council were obvious, and its use in this way tended to prevent mistakes. The differences shown in these analyses are in some instances, no doubt, due to errors in technique, but, as many of these differences had been confirmed by two, three, or four separate determinations, some of them were due to inherent differences in the tests.

Dr. Houston then gave an account of Prof. Dreyer's new flocculation test for the diagnosis of syphilis, and explained that it entailed only one test substance—the antigen which could be made of standard opacity by the dropping method described in Prof. Dreyer's paper. This test presented the enormous advantage of being a quantitative one. It was shown that where the readings by the other tests were different—either due to want of balance in the hæmolytic system or due to inherent differences in the tests—the Dreyer reading was low: thus the differences could be largely eliminated or assessed at their proper value. The + + Wassermann covered a very large range of reaction, from 3 or 4 units to 2000 units. An analysis was given of 300 cases in which the blood was tested by (1) Harrison's method, (2) Fleming's method, and (3) Dreyer's method. Real differences occurred in about 6 per cent. of this series of determinations, and in several instances it was difficult to say which test gave the correct finding, but on the whole the evidence was in favour of Dreyer's method. A decision as to which test gave the more correct finding required the study of a larger series of comparative tests, but it was thought likely that some form of flocculation test would eventually supplant the Wassermann technique with its inconstant hæmolytic system.

Annual Dinner.

The annual dinner of the Society was held in the Medical Institute, Belfast, on Dec. 8th. In the absence through indisposition of Dr. Robert Hall, the President, the chair was occupied by Mr. J. A. Craig, a vice-president. One hundred members and guests were present. Prof. R. J. Johnstone proposed the toast of the Prosperity of the City of Belfast, which was responded to by the Lord Mayor, Sir W. J. Coates. The Chairman gave the toast of the Houses of Parliament of Northern Ireland, which was responded to by the Marquis of Dufferin and Ava and the Hon. H. O'Neill. Prof. J. A. Lindsay gave the toast of the Legal Profession, which was responded to by the Lord Chief Justice, Mr. Justice Andrews, and the Recorder of Belfast. Dr. T. Houston, ex-President of the Society, gave the toast of the President, and coupled with his name that of the Chairman. Mr. Craig replied. The Chairman congratulated Dr. W. W. D. Thomson, the secretary of the Society, on his recovery from his recent serious illness. The dinner was one of the most successful and enjoyable in the history of the Society.

THE LATE DR. JAMES JOHNSTON.—Dr. Johnston, who qualified L.R.C.P. Edin. in 1884 and graduated in the same year M.D., C.M. at the University of Toronto, died on Nov. 25th in Jamaica, where he had been a missionary for 47 years. He was the author of a Central African study entitled "Reality versus Romance," and had written a guide for tourists in Jamaica.

Reviews and Notices of Books.

PULMONARY TUBERCULOSIS.

By Sir JAMES KINGSTON FOWLER, K.C.V.O., C.M.G., M.D., F.R.C.P., Consulting Physician to Middlesex Hospital, Hospital for Consumption and Diseases of the Chest (Brompton), King Edward VII. Sanatorium, Midhurst. London: Macmillan and Co. 1921. With 52 illustrations. Pp. 284. 20s.

MANY features distinguish this book from other treatises. For example, Sir James Kingston Fowler breaks away from the beaten track in his historical survey, giving prominence to two British workers—William Stark and William Budd—whose contributions to the advancement of medical science have hitherto been underrated. It is a pity that his appreciation of these and other British scientists should have as a setting a sweeping denunciation of German scientists in a spirit reminiscent of war-time propaganda; though Koch and Walther do exceptionally receive praise. A short but most interesting chapter on the Rôle of Heredity ends with the rather unexpected conclusion that the attempt to state with scientific precision the influence of heredity is doomed to failure. This is not a satisfying verdict, but the author justifies it with many cogent arguments proving the intricacy of the problem. In this, as in practically every chapter, he shows a first-rate and first-hand knowledge of morbid anatomy.

A characteristic and eupeptic feature of this book is the author's tendency to lapse into a conversational style marked by quips and barbed digs at the foibles of faddists, though some of his criticisms are ill-advised. His scepticism as to the very existence of such a morbid entity as "hilum tuberculosis" finds expression in his definition of it as "a 'shadow' first seen in a darkened room and not yet clearly recognised in the daylight of the post-mortem room." To which the sponsors of "hilum tuberculosis" might feel tempted to retort by quoting the author's opinion expressed elsewhere in this volume that one does not find a condition post mortem till one looks for it. Another and most valuable characteristic of the book is the imposing quantity of clinical experience and sound advice it contains. In a few lines Sir James Kingston Fowler tells more about hydrotherapy, the ominous significance of the inverse type of fever, the curability of tuberculous meningitis, the folly of exploring for fluid with a fine needle, than most writers can condense into several pages. Here and there his advice seems hardly up to date; in discussing the treatment of accidental pneumothorax he omits all reference to oxygen or nitrogen replacement. In some cases it may be advisable to exploit an accidental pneumothorax and to maintain it as an artificial pneumothorax by injections of gas. His opinion of modern methods of diagnosis is seldom flattering. Force is given to a depreciatory discussion of X rays by a reference to the author's own experience during the war at a military hospital, where, in collaboration with the late Mr. C. R. Lyster, he was able to check this method with that of ordinary physical examination.

The author is a caustic critic of the use of tuberculin, and he suggests that "a tuberculosis dispensary that has become a 'tuberculin' dispensary has become a very dangerous place." "Artificial pneumothorax," he says, "is the only advance in the treatment of pulmonary tuberculosis since the introduction of sanatorium treatment as carried out at Nordrach." He is a supporter of sanatorium treatment, but is rather difficult to follow in discussing the vexed question of graduated exercise. On page 220 he writes: "No exercise, except walking, for two years, i.e., after the arrest of the disease and disappearance of tubercle bacilli from the sputum"; while on page 232 he speaks with evident enthusiasm of the excavation by Frimley patients of 5000 tons of earth wheeled 300 yards.

The dominant virtues of this book are its sound pathology and ripe clinical experience: they are in evidence on almost every page. Its failing is that of its limits. Instead of giving space to a full account of such an epoch-making advance as, for example, the Pirquet test, the author often digresses to quote earlier writings and to show how views expressed many years ago have now been proved correct. The book, therefore, is hardly suitable for the student actuated by the single-hearted desire to please examiners, but it is a work which both general practitioners and tuberculosis specialists will enjoy reading.

DIAGNOSIS AND TREATMENT OF VENEREAL DISEASES IN GENERAL PRACTICE.

Third edition. By Brev.-Col. L. W. HARRISON, D.S.O., M.B., Ch.B., M.R.C.P.E., Director of Venereal Department, St. Thomas's Hospital. With a chapter on the Medico-Legal Aspects, &c., by F. G. CROOKSHANK, M.B., F.R.C.P. London: Henry Frowde and Hodder and Stoughton. 1921. Pp. 525. 25s.

THE first edition of this book, published in 1918, rapidly won its place as the authoritative English text-book on the subject, and it is not surprising that a third edition has been called for so soon. It has certain conspicuous merits. It is well arranged, covers the ground adequately, is thoroughly up-to-date; it is remarkably free from redundancies, and while its teaching is dogmatic whenever necessary, on matters as to which there is still considerable divergence of opinion the author preserves balance. Further, he deals with every aspect of the subject so systematically, and in such detail, that it is an invaluable guide for the tyro, while the expert will find much that is stimulating and suggestive in its pages.

One slight shortcoming of the earlier editions has been remedied: the treatment of gonorrhœa in the female is now dealt with in full detail. Further, a valuable section has been added on "proofs of cure" in gonorrhœa. This should be of great help to those who are anxious not to stop treatment too soon, and at the same time should serve to protect patients from over-treatment. Like many other workers in the same field the author has found that success in the treatment of gonorrhœa with vaccines depends on (1) proper dosage, (2) the strain of gonococcus employed, and (3) the method of preparation of the vaccine. His review of vaccine treatment, which includes observations on patients treated with detoxicated vaccines, is concise but valuable, and his conclusion, with which most workers will agree, is that the case of gonorrhœa subjected to a rational vaccine-therapy runs a milder course than that from which vaccines are withheld.

In the section on the treatment of syphilis considerable modifications have been introduced since neo-salvarsan or one of its congeners is now generally used in place of "606." All the arsenical derivatives of use in the treatment of lues are passed under review, including silver-salvarsan, and a useful series of tables, based on the routine courses of treatment in use at St. Thomas's Hospital, is inserted. In these tables the equivalent doses of 914, 606, and silver-salvarsan are tabulated, and any patient treated upon the lines there laid down will not suffer from inadequacy of treatment. Colonel Harrison's experience has led him to doubt the anti-syphilitic powers of mercury, and he emphasises the need of combined administration of arsenic and mercury in the "continuation treatment" of the disease. The chapter on the prevention of venereal diseases gives much food for thought. After reviewing the subject, and giving statistical tables based on the experience of the U.S. Army in France, Colonel Harrison concludes that "the greatest hope lies in the prompt treatment of patients in the earliest stages of the disease, thereby ensuring a maximum of cures and a minimum of infection carriers."

An excellent chapter on the medico-legal aspects of venereal disease is contributed by Dr. F. G. Crookshank. This should be carefully read by all medical officers in charge of V.D. clinics, in order that they may have knowledge of some of the pitfalls that surround them in their work.

Though the volume contains more pages it is less bulky than the first edition. It is clearly printed on good paper and copiously illustrated. Most of the pictures are excellent, but some of the coloured plates are too vivid to be true. Altogether the volume is deserving of high praise. It is the conscientious and sometimes brilliant work of one who has done more than any other in this country, perhaps in this generation, to systematise on a rational basis the treatment of the venereal diseases.

SURGERY.

A Pocket Surgery. By DUNCAN C. L. FITZWILLIAMS, C.M.G., M.D., Ch.M., F.R.C.S. Edin. and Eng. London: Edward Arnold and Co. 1921. Pp. 348. 10*s.* 6*d.*

THE value of a pocket manual on a large subject is always doubtful. It is impossible in a short compass to give a comprehensive description of the whole of surgery. There is hardly a condition in which it is possible to state dogmatically that one disease has one treatment, and in a text-book of this size it is impossible to discuss adequately alternative treatment. The student is therefore very prone to gain erroneous ideas, probably from a misinterpretation of the author's statements. The only possible way to condense such a subject as surgery is to reduce the matter as far as possible to tabular form.

The difficulties of condensation are shown by a few examples taken at random from this text-book. In the treatment of exophthalmic goitre the student is rightly told that surgical treatment is more and more replacing medical treatment; but the impression given—that the correct treatment is to remove both lateral lobes in every case—is surely not intended. In the discussion of the diagnosis of gastric surgery no mention whatever is made of the importance of the clinical history. The methods of examination are briefly given, and percussion and gastroscopy, which might be safely omitted in most cases, stand out with undue importance as diagnostic measures. We are told also that the symptoms of acute and chronic gastric ulcer are much the same, but are more prolonged in the chronic form, and that hæmorrhage in both forms may be excessive, but in the acute form is rarely fatal; as a matter of actual fact, more deaths from hæmatemesis are due to acute than to chronic ulcers. As to the treatment of the chronic variety, the advice is given to perform a gastro-enterostomy, to free adhesions, and to examine the appendix; this form of treatment sounds simple, but will not be satisfactory in all cases. In discussing the symptoms of a perforated gastric ulcer Mr. Fitzwilliams states that it is not always easy to distinguish a ruptured ulcer from a ruptured ectopic pregnancy; no attention is, however, directed to the more difficult diagnosis from a perforated appendix or an acute pancreatitis. The acute ulcer is mentioned among the causes of dilatation of the stomach, and in the paragraph devoted to treatment it is suggested that if daily lavage of the stomach does not bring about a cure a gastro-jejunostomy or gastro-duodenostomy should be performed. Mr. Fitzwilliams states that this treatment has almost entirely superseded pyloroplasty; possibly this is so, but it must be remembered that it is a form of treatment which in the acute variety of dilatation has nearly 100 per cent. mortality. The list of methods of examination for a carcinoma of the stomach is headed by distension of the viscus with gas, surely most dangerous advice.

These faults must be regarded not as peculiar to Mr. Fitzwilliams's text-book, but as likely to exist in any form of pocket text-book. Under certain circumstances the advice which can be given in a small compass may be correct, but it may prove very dangerous. It is therefore difficult to see quite what purpose such a book serves. No student can be advised to read it alone: it could only be recommended to one who has no time or inclination to read larger text-books, when it would assist him to take careful notes of his own cases.

Diagnostische und Therapeutische Irrtümer und deren Verhütung. Chirurgie der Wirbelsäule, des Rückenmarks, der Bauchdecken, und des Beckens. Von Geh. Med.-Rat Prof. G. LEDDERHOSE. Leipzig: Georg Thieme. 1921. With 20 diagrams. Pp. 160. M.45.

THIS little book deals with diagnostic and therapeutic mistakes likely to be made in connexion with diseases of the vertebral column, spinal cord, abdominal wall, and pelvis. It is really a small manual of diagnosis and treatment, and forms one volume in a large series of books which have been or are to be issued. The subjects dealt with in this book are a somewhat strange mixture, but the substance appears to be sound surgical doctrine.

In the differential diagnosis of tumours of the abdominal wall we could find no reference to phantom-tumour, which may certainly cause serious mistakes in diagnosis. In the section dealing with pelvic abscess no specific mention is made of diverticulitis, which is worthy of some reference. For the rest the book gives a clear account of the many pitfalls in diagnosis and treatment. The diagrams are not very good.

THE ENGLISH PRISON SYSTEM.

By Sir EVELYN RUGGLES-BRISE, K.C.B., Chairman of the Prison Commission for England and Wales; President of the International Prison Commission. London: Macmillan and Co., Ltd. 1921. Pp. 275. 7*s.* 6*d.*

IN 1910 the International Prison Congress at Washington accepted the invitation of the British Government to hold the next quinquennial congress in London; for the foreign visitors to this 1915 congress Sir Evelyn Ruggles-Brise prepared a manual of the history and leading features of the English prison system. The war prevented the realisation of all the plans, and although the greater part of this volume was prepared in 1915, it was not published till six years later, the statistics being brought up to date in most ways. The manual forms a complete and fascinating account of all the important changes that have taken place in our prison system during the last 100 years and contains interesting references to notable innovations during earlier periods in English history. It is a book which should be in the hands of every student of criminology, while several chapters, such, for example, as that on the History of Penal Servitude would interest a far wider circle.

Sir Evelyn Ruggles-Brise gives not merely a record of drastic changes with far-reaching effects, but a philosophical discussion of each problem involved. Had the manual appeared in 1915, the writer might have been hailed as a great criminologist, as well as a successful, broad-minded, and humane reformer and adminstrator. But the war drove home the lesson that conduct is essentially a reaction of mental life, and can only be understood by exploring the mind of the individual. This work contains no reference to that *magnum opus* of modern criminology, "The Individual Delinquent," by Dr. William Healy, first published in 1914; it does not go beyond the investigations of the late Dr. Charles Goring, and it author, like Goring, belongs to the rationalist school. True the manual does not profess to be a text-book of criminology, and, moreover, we may read between the lines that Sir Evelyn Ruggles-Brise is appreciative of the new ideas. He has obviously such a receptive and sympathetic mind that if the new psychologists had been able to put their case fairly before him he would soon have appraised its essential features. Had this been effected, and had he remained at the post he has now relinquished, he would have become a wise and inspiring leader. He is never deterred

by past failures; witness the interesting chapters on Female Offenders, Vagrancy, and Inebriety. Perhaps he is at his best in the chapter on the Borstal System, the development of which has evidently been his special care.

A special chapter on the Medical Service describes the numerous demands on the prison doctor. We hope that all prison medical officers have the ability attributed to them by Sir Evelyn Ruggles-Brise, but it is doubtful whether a doctor who has to develop along so many different lines is always qualified, even if he has served a term as officer in an asylum, to give the best opinion on insanity and mental defect. This manual is a valuable one which can be read with interest and profit by any intelligent citizen; for the specialist it is essential. There is an excellent and correct index, and the whole production forms a setting worthy of the subject matter.

A MANUAL OF PHYSICS.

Second edition. By J. A. CROWTHER, Sc.D., F.Inst.P., Sometime Fellow of St. John's College, Cambridge, Demonstrator in Physics in the Cavendish Laboratory, Cambridge. London: Henry Frowde and Hodder and Stoughton. 1921. Pp. 537. 16s.

THE appearance of a second edition of Dr. Crowther's Manual of Physics so soon after the first is the surest evidence of the need for a work which gives, not too briefly, the outlines of elementary physics.

The book may well be popular among medical students, for the subject-matter is well arranged, the explanations of some of the more difficult parts of the subject are quite adequate, and the whole of the letter-press is interspersed with diagrams which, on the whole, leave little to be desired. In the section on Photometry we should have liked to see included Joly's elegant and simple method of comparing the illuminating powers of two sources. The reader will have some difficulty in seeing from diagram No. 125 how the observer may directly view the two illuminated surfaces. The diagram showing the minimum deviation (printed duration) is too symmetrical, and might give the reader the impression that the angle of refraction was necessarily just one-half that of the angle of incidence. The diagrams illustrate a well-written and very useful book.

DISEASES OF CHILDREN.

By HERMAN B. SHEFFIELD, M.D., formerly Instructor in Diseases of Children, New York Post-Graduate Medical School and Hospital, &c. London: Henry Kimpton. 1921. Pp. 798. 48s.

Dr. Sheffield's book contains no salient advance on the methods of diagnosis and treatment commonly recommended in this country, and will make no special appeal to English readers. Even with regard to infant feeding, the methods advocated resemble our own system of percentage feeding, with its associated disadvantage of the difficulty experienced by inexpert attendants in the preparation of the milk mixtures ordered. With Dr. Sheffield's prescriptions for diet after seven months, and indeed up to five years, we cannot agree; the diets appear complex, and insufficient in many respects, containing an unnecessary excess of fruit juice and fruit pulp and not the necessary variety of proteins. A section on the Prevention and Control of Disease, however, contains much that is of value; the method of intravenous perfusion via the anterior fontanelle into the superior longitudinal sinus is advocated for infants, and the administration of intraperitoneal saline solution in acute summer diarrhœa—a method first practised in England—is carefully described. The section devoted to the physical examination of children seems elementary and redundant. The difficult study of disease in childhood should surely follow preliminary general instruction in clinical methods, and a recapitulation of physical signs and surface markings is superfluous in a text-book devoted to this special subject.

The description on p. 268 of a case of acute intussusception in a young infant, which remained undetected for three days, reflects but little credit on the physician. It is surprising, too, that the special incidence of intussusception in breast-fed infants should have escaped the author's notice. A more hopeless confusion than exists under the heading Rheumatism and Rheumatic Fever would be difficult to imagine. This all-important disease of childhood receives scanty treatment; the description of the early physical signs of a heart damaged by rheumatic infection and of its treatment is altogether unsatisfactory.

The subject-matter of the book is, on the whole, well arranged, and the plates, mostly from photographs, are excellent, but the cumbersome use of dog-latin equivalents in the nomenclature of disease throughout the book is unfortunate. The book is attractively produced, and the colour plates are excellent.

JOURNALS.

JOURNAL OF PHYSIOLOGY. Edited by J. N. LANGLEY, Sc.D., LL.D., F.R.S. Vol. LV., Nos. 5 and 6. Cambridge University Press. 1921. Pp. 305–428. 11s.—The Regulation of the Excretion of Water by the Kidneys, by J. G. Priestley. The problem discussed is whether the diuresis following the drinking of large amounts of water is related to any changes in the blood comparable to the changes in hydrogen-ion concentration which regulate the breathing. The excretion of urine can be increased by drinking water from about 40 c.cm. per hour up to as much as 1200 c.cm. per hour, the specific gravity falling to less than 1001; the comparative estimations of the amount of hæmoglobin in the blood before and after diuresis showed no appreciable change. After water-drinking, the loss in weight on drying blood; the chlorine content of the blood; the excretion of water and chloride in the urine during water diuresis were estimated. It was proved that there were slight but definite changes in the composition of the blood accompanying the diuresis provoked by drinking water. The excretion of water is largely but not entirely in relation to the excretion of chlorides. Injection of pituitrin (1 c.cm. intramuscularly immediately or shortly after drinking two litres of water) delays the diuresis produced by water-drinking for 4–6 hours. Water diuresis then sets in and is accompanied by an increased excretion of chlorides. These results, it is suggested, are compatible with the regulation of excretion of water by the kidneys of a two-fold nature: (*a*) a main regulation dependent on the diffusion pressure of water in the blood, and (*b*) a subsidiary modification of this regulation dependent on the inability of the kidney to hold back water when the diffusion pressure of water in the urine is considerably below that of the blood.—The Identity of Hæmoglobin in Human Beings, by G. S. Adair, J. Barcroft, and A. V. Bock. The different affinities for oxygen of various samples of human blood may be due either (1) to differences in the hæmoglobin itself, or (2) to differences in the conditions affecting it—e.g., the salt and hydrogen-ion concentration. It would seem that if samples of hæmoglobin from different individuals be freed from the corpuscles in which they are held and be subsequently treated in exactly the same way, they give oxygen-dissociation curves which are indistinguishable. On the other hand, preparations prepared by slow dialysis of blood against distilled water may simulate solutions in appearance but still containing intact, though swollen corpuscles, give dissociation curves far different from those of true aqueous solutions of hæmoglobin.—The Direct Measurement of the Partial Pressure of Oxygen in Human Blood, by J. Barcroft and M. Nagahashi. In principle the method used was to withdraw blood from a vessel, artery, or vein by direct puncture. To this blood is exposed a small bubble of alveolar air at 37° C. until an equilibrium is established between the blood and the bubble. The bubble is then analysed in a suitable apparatus. The

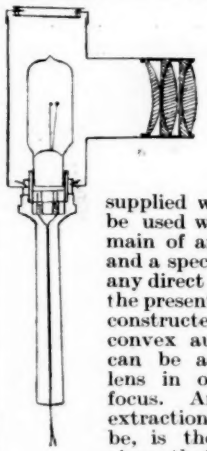
authors set forth their method in detail, and they find that it is possible to measure the oxygen pressure in blood drawn directly from a vessel in man to within about 2 mm. on the average, and they confirm experimentally the dissociation curves for venous blood calculated by Douglas, Haldane, and others, as well as the observations of Meakins and Davies on the great range of unsaturation of blood from the basilar vein when the arm is exposed to widely differing temperatures. The experiments indicate a fifty-fold alteration in the volume of blood traversing the skin of the arm per minute.—The Effects of Adrenalin upon Respiration, by Ff. Roberts. It has long been known that adrenalin, when injected into an animal, induces a profound change in respiration. The author, after noting the results of previous observers—from 1895 onwards—describes his own observations on anæsthetised rabbits and cats. The Parke-Davis 0·1 per cent. solution was used—the dose commonly employed was 1 c.cm. of 0·01 per cent. adrenalin, sometimes 1 c.cm. of 0·005 per cent. or of 0·1 per cent. The tube connecting the artery and manometer for the blood pressure experiments was filled with pure Ringer's solution. Adrenalin in large doses, besides causing diminution and temporary arrest of respiration, causes alteration in rate, and may cause Cheyne-Stokes respiration, and the diminution and arrest occur when there is no change in blood pressure and are mainly central in origin. The respiratory effects are caused by sudden anæmia of the respiratory centre due to vaso-constriction. The author found no evidence that adrenalin causes nervous impulses from the periphery.—Other communications include The Action of Carbon Dioxide on Salt and Water Distribution in Blood, by Genko Mukai; The Measurement of the Oxygen Content of the Mixed Venous Blood, and of the Volume of Blood Circulating per Minute, by J. Barcroft, F. J. W. Roughton, and R. Shoji; Variations in Alveolar Carbon Dioxide Pressure in Relation to Meals, by E. C. Dodds and T. Izod Bennett; Studies on the Physiology of Capillaries, by August Krogh; On the Path of Conduction between Auricle and Ventricle in the Amphibian and Reptilian Heart, by D. T. Barry; The Electrical Response of Denervated Muscle, by E. D. Adrian; The Nature of the Isometric Twitch, by W. Hartree and A. V. Hill; The Relation of Pulse Pressure to the Output of the Heart (as investigated on the heart-lung preparation), by Ruth Skelton; and Exosmosis from Animal Cells, by J. Gray.

IN the AMERICAN JOURNAL OF OPHTHALMOLOGY for October G. F. Garraghan writes of a case of papilloma of the cornea in a man of 70. A tumour grew from the sclero-corneal limbus and attained such size as to overlap more than half the cornea. It was excised and, histologically, showed the structure of a papilloma. It subsequently recurred more than once. These tumours are rare; they occasionally become malignant.—F. Yano describes a typical circinate retinitis in a boy of 13. It is only in old people that this disease is usually observed. The vision was down to 0 in one eye and 0·1 in the other. The ring of white exudation enclosed both macula and disc. At the macula itself in each eye was a white plaque of exudation.—A. C. Macleish describes keratitis caused by excessive sugar ingestion. Over-indulgence in sweets by children is said to be responsible for many cases of conjunctivitis, blepharitis, phlyctenules, and facial eruptions. In the case described there was a distinct interstitial keratitis in a child of 3. There was a negative Wassermann reaction. It was found that the child ate a large quantity of sugar daily; when this was stopped the trouble disappeared, recurring when the interdict against sweets was removed.—Oscar Dodd reports a case of repeated operations for glaucoma. After a recurrence following upon a Lagrange operation, a sclero-corneal trephining operation was performed. This was followed by hypotony, iritis, and cataract. After extraction of the cataract the tension again went up and a second trephining operation was performed. The trephine hole got blocked up with thickened membrane, which was subsequently removed. There was a family history of glaucoma in this case, but the second eye did well after a single operation.—Ellice M. Alger describes three cases of word-blindness. One of these cases was associated with an attack of right-sided hemiplegia in a man of 59 with a positive Wassermann reaction, leaving a right homonymous hemianopsia, with a total disability to read letters or words though visual acuity was good, numbers being read normally. This disability gradually disappeared, although the hemianopsia remained. The other two cases were congenital. Visual memories seem to be stored in the region of the left angular gyrus in right-handed people, and the theory of acquired word-blindness is that the connexion between the visual centre in the occipital lobe and the angular gyrus is somehow interrupted. In the case of congenital word-blindness the defect is probably in the development of the cortical centre itself and may be of varying severity. The importance of recognising the condition lies in being able to disabuse the minds of the parents or teachers who often take the inability to read as stupidity, while all the time the mental condition of the child may be normal in all other respects. Improvement may be effected by special methods of teaching.—Eugene M. Blake in a paper entitled Ocular Changes in Infantile Scurvy states that exophthalmos due to hæmorrhage into the orbit is a not infrequent symptom of the infantile scurvy, and was first described by Sir Thomas Barlow. It may even be the first symptom, and the child may first be brought to see the oculist. When the correct diagnosis was established in this case the diet was changed from artificial foods to fresh cow's milk and orange-juice, and the child quickly recovered under antiscorbutic measures.—The notes in this number include illustrations of a foreign body spud illuminator by W. H. Lowell and a new test-card by J. M. Thorington.

New Inventions.

AN OPERATING HAND-LAMP FOR OPHTHALMIC WORK.

FOR several months I have been using a hand-lamp in which the source of illumination is the "pointolite" electric lamp of the Ediswan Co., and as I have been so satisfied with it in all operations on the eye, I venture to bring it to the notice of ophthalmic surgeons. The lamp is of 30 candle-power and is enclosed in a metal case with an aperture on one side in which a system of achromatic lenses is so fixed that the emergent rays are parallel. By this means the field of operation is evenly illuminated by a disc of light free from all shadows. A resistance is supplied with each lamp, whereby it can be used with a direct current from the main of any voltage between 100 and 250, and a special lamp can be got to work on any direct current down to 32 volts. Up to the present, however, a lamp has not been constructed for an alternating current. A convex auxiliary lens (A) of 3 dioptres can be adjusted in front of the fixed lens in order to bring the light to a focus. An opaque capsule after cataract extraction, no matter how thin it may be, is thereby brought so clearly into view that capsulotomy operations can be performed with great precision. The lamp can be used for a considerable length of time without any inconvenience from heating. It is made by John Trotter, Ltd., Gordon-street, Glasgow.



Glasgow. A. MAITLAND RAMSAY, M.D. Glasg.

THE LANCET.

LONDON: SATURDAY, DECEMBER 17, 1921.

Municipal Health Services.

As may be seen from a brief report in another column, medical practitioners in Willesden have now met the executive committees of local associations of ratepayers in a discussion of the health policy of the Urban District Council as set forth in the medical officer's forty-fifth annual health report. The memorandum,[1] drawn up by a special committee of the B.M.A., Willesden division, criticising the Council's health policy, was before this meeting on Dec. 7th and formed the basis of discussion. No formal resolution was passed, but the tenor of opinion was in harmony with Resolution 7 passed on Nov. 15th—viz., "The division calls the attention of the Willesden ratepayers to the health policy of their council, which threatens to destroy the freedom not only of the medical profession but of every individual in the community, and urges the ratepayers strenuously to oppose at the next municipal election those who are responsible for a policy which the medical profession of Willesden considers to be a serious and increasing menace to the public health." Then the ratepayers invited the doctors to coöperate in selecting municipal candidates to oppose the existing health policy. Two medical men present at the meeting were willing to become such candidates. It was pointed out by one of the medical speakers that doctors unable to serve on the Council would be ready with their advice if coöpted on the Health Committee. A local advisory medical council was suggested by another speaker as the right agency for putting health matters in the urban district upon right lines. Finally, the ratepayers expressed their appreciation of the opportunity afforded to them of conferring on local health problems with members of the medical profession, and they expressed a wish that such opportunities should be encouraged.

In Willesden it is the municipal hospital around which has centred the hottest part of the controversy. To this hospital the private practitioner has no access, and it would therefore be fair to let the Willesden health service stand or fall by the success of this nearly unique experiment, provided that those who run it have had the materials to hand for making it the success at which they were striving. A speaker at last week's meeting spoke of this hospital as a disgrace. But, as may be seen from the medical superintendent's annual statement, which appears on p. 85 of the health report, he had there to complain, in the same terms as a year ago, of a shortage of beds, of an inadequate nursing staff, and of insufficient medical help. In the year 1920, with 199 available beds, 2608 patients were dealt with by a staff of 51 nurses and two medical officers; the sickness-rate among the nurses was high, and at no time was there a clean bill of health among them; the resident medical officers were on duty seven days a week, with no break from year end to year end save for annual leave. In this hospital during the year 1920 the following fever cases were admitted: Scarlet 445, diphtheria 605, other infections 63, including typhoid 8, infantile diarrhœa 16, and erysipelas 8. Pressure upon the maternity beds was continuous; 470 cases were dealt with, as compared with 239 in the previous year; complications included placenta prævia 6, contracted pelvis 5, eclampsia 2, pelvic inflammation 5, sapræmia and septicæmia 10. Gynæcological cases numbered 81, including incomplete abortion 19, and acute mastitis 8. 524 anæsthetics were administered to operation cases, amongst them tonsillotomy 340, phimosis 44, abscess and appendicectomy each 19, for hernias of various forms 16. This amount of work is claimed to be equal to that ordinarily done at a hospital double the size, and in the view of the medical superintendent it implies an enormous strain on the limited resources. It was alleged at last week's meeting that most of the non-infectious cases might have been treated at home. There are 72 beds at the Willesden Hospital, and 330 occupied beds at the infirmary in Acton-lane. London hospitals, it was said at the meeting, were available for Willesden patients. The matter of hospital accommodation in Willesden is certainly one for the ratepayers to look into.

The health policy of the Willesden Council raises a profound question of principle which demands broad and statesmanlike handling. Preventive and curative medicine are at bottom one and indivisible. There may appear to be one glory of the sun and one glory of the moon, and the larger luminary sometimes has its radiance completely obscured by the dark side of the smaller, but the source of light is the same. It is becoming a truism to insist that the general practitioner is now and always will be the chief agent of preventive medicine. The preventist becomes all too readily a mere cataloguer of morbid conditions in relation to certain lines of civic conduct. The public vaccinator is the embodiment of business in the prevention of small-pox, but what service would he be to the community should the influence of the practitioner in the home so wane that parents lost faith in vaccination and refused to submit their children to it. Inspection of children of school age becomes a weariness to the flesh of medical men and women engaged in it, unless combined with some kind of treatment which allows them to see the fruition of their labours. In this respect, no doubt inevitably, the medical staff of the London County Council is sadly handicapped. The remedy, which is only the concentrated wisdom of the Dawson Report, is to abolish as far as possible the cleavage between preventive and curative work. It is impossible to prevent evils which you do not foresee. A practical knowledge of ill-health is the only way to acquire a real insight into the conditions of health, and the search for the earliest manifestations of disease is the chief stand-by of preventive medicine. Like goodness or purity, health is not an attainable ideal, and the immunity which appears to last is that produced by repeated small contacts with morbid influences. Innocence has little chance in an epidemic. As a nation we are proud of our administrative flexibility, and there is much to be said for each area solving its own public health problems. Willesden and Bradford have both had visions of a municipal health service without the help of the general practitioner; and indeed the branches of practice touched by municipal clinics were almost untouched by clinical medicine. Curative work on an individualistic basis had left out to a remarkable extent any effective supervision of maternity, of the nursling, and of the pre-school child. The gauntlet has now been thrown down. The Willesden division of the B.M.A. has inquired of the parent body how it is that members of the Association can be found to

[1] THE LANCET, Nov. 26th, p. 1124.

accept positions in such a health service. The current issue of *Public Health* points out to the Association that if it embarks on a campaign against this service it shows its intention to ally itself with any and every reactionary force in order to oppose the natural development of public medical services. We believe that the solution in Willesden, as in Bradford, must needs come—neither confounding the persons nor dividing the substance—along the lines of a local medical advisory council.

Adenoids.

CHRONIC hypertrophy of the nasopharyngeal tonsil, the condition commonly known as "adenoids," is to be found all over the surface of the globe, but it is more frequent in damp temperate climates, and is perhaps commoner in England than in any other part of the world. Here it is amongst the commonest diseases of childhood; it produces disabilities of far-reaching importance and, although the hypertrophy usually disappears about puberty, much of the damage it has done remains throughout life, and constitutes a mass of disability of serious import to the State. The mechanical obstruction to nasal breathing produces deformities of the face and chest which permanently impair the normal respiration; infection spreads from the pharynx to neighbouring parts, causes cervical adenitis, and is responsible for a large amount of the catarrhal and suppurative disease of the ears which disables a multitude of our population; infection also reaches the gastro-intestinal tract, and the relationship of adenoids to such diseases as rickets and appendicitis has been the subject of inquiry in various quarters. Adenoid children are often dull and apathetic, though the reason of this peculiar "aprosexia" has not been satisfactorily explained. In addition to all this, various neuroses are related to the presence of adenoids; they form a long list, and include laryngeal spasm, asthma, stammering, habit spasms, enuresis, and even epilepsy.

The enumeration of the ill-effects of adenoids makes such a formidable array that we must guard against the error of supposing that all the affections in the long list are always due to this cause; particularly is this the case among the so-called "reflex" effects, for no one supposes that epilepsy or enuresis, for instance, are only caused by adenoids, or that there is no other factor in their production; not all children with even large adenoids are dull and backward, nor do deformities of the jaws and palate necessarily result. On the other hand, it should be remembered that adenoids in a roomy nasopharynx may cause no nasal obstruction, and yet may produce inflammation of the ears. The effects of adenoids, as well as the final results of treatment, come more constantly under the observation of the general practitioner than of the specialist. A paper by Dr. H. MERRALL appeared in THE LANCET of Nov. 12th which dealt with some of the results he had observed. Naturally all his conclusions will not find universal acceptance, and some have indeed stimulated discussion. Among these we note his statements that enlargement of the palatine tonsils is always secondary to enlargement of the pharyngeal tonsil, and that flat-foot is an almost invariable accompaniment of adenoids; while the success of the adenoid operation in curing such affections as epilepsy, chorea, and nocturnal enuresis, and the inter-relationship of adenoids and rickets, remain as fields of observation and research. We have been informed by Dr. J. W. KYNASTON that a Council has now been formed representing the belief among certain qualified medical practitioners that "operations for nasal obstruction are being altogether overdone." This Council for the Promotion of Oro-Nasal Hygiene has a secretary who may be communicated with at 26, Welbeck-street, London, W. Now the presence of adenoids is one of the principal causes of nasal obstruction. With such a category of possible ills due to the presence of adenoids as that just set out, those who criticise the clinical actions of their colleagues in making a practice of operating will require a good deal of positive evidence before proving good their case. The positive evidence, to be really useful, would mean the records of a very large number of cases where the presence of adenoids has been undoubted at a previous period, and where non-removal has led to no ill consequences.

We publish in another column a paper by Mr. DAVID RANKEN, nose, throat, and ear specialist to the R.A.F. Medical Service, in which are set out problems presented by the international medical requirements for air navigation with special reference to nose, throat, and ear. It is the common opinion of those who sit upon medical boards for the examination of candidates for aviation that a pilot should be organically sound, especially in regard to the nose, throat, and ear, but the notes of actual examination of candidates given by Mr. RANKEN show that the commonly accepted regulation can be set aside in particular cases, and that there is an admirable absence of pedantry in the verdicts upon those who present the results of old nose or throat and ear trouble. Of adenoids it is said that the candidate in whom they have been discovered is not rejected for that alone, nor is operation insisted upon where mouth-breathing constitutes apparently no disability. The assessment of the symptoms determines the results of the examination. Medical boards which examine candidates for aviation have, therefore, before them the material upon which some collective and considered judgment could be given as to the place which operation plays in the treatment of adenoids. From these boards particular information might be obtained in time upon the following points: the number of candidates who, having adenoids, can still rank as practically sound; the number whose remaining disabilities are due to neglected adenoids; the number with adenoids who are rejected for deafness; and the number able to pass the hearing tests, who have been operated upon already. If figures like these could be collected in some mass, the results would be very useful to the medical profession.

The Dental Board.

ON Dec. 7th was opened the first session of the Dental Board of the United Kingdom, a title which in view of current political developments may have to be revised. The Board, which consists of appointed members has as its first duty to construct and assemble the machinery for carrying out the Dentists Act of 1921. The members will hold office for such term not exceeding three years from the commencement of the Act (July 28th, 1921) as the Privy Council may determine, and after the expiration of whatever period may thus be fixed a Board consisting of seven appointed and six elected members will carry on the work so initiated. In opening the session the chairman of the Board, The Right Hon. F. DYKE ACLAND, M.P., referred to the committee over which he had presided in 1918, a body appointed to report upon the extent and gravity of the evils attending dental practice. He is to be congratulated upon the

unanimity of this report and upon the Act of Parliament which has embodied so promptly the recommendations made. That promptitude, paradoxically, has been due to a certain lack of interest which the main body of the House of Commons showed in the Bill. The Government introduced and supported it, Parliament acquiesced, and it is now for the Dental Board and the dental profession to make the science and profession of dentistry, in Mr. ACLAND'S words, "an effective instrument for promoting the health and efficiency of the nation."

Dental disease is as old as the history of man, but to tell the story of official dentistry in this country necessitates going back but 66 years to find the beginnings of two movements which have now reached a new and interesting stage of development. The stages have been as follows: To obtain from the medical profession recognition of the status of dentists; to secure registration and some element of self-government; to win from the public recognition of the status so granted, and of the fact that those who had attained to it were fully qualified practitioners. The Royal College of Surgeons of England was first moved in August, 1855, to appoint a board of examiners to examine candidates for "such a distinction as might well be called 'Licentiate in Dentistry,'" and in the following year a petition was presented to the same College asking it to institute an examination in the department of dental surgery, "as in midwifery." This petition was signed by 18 gentlemen, who later at a private meeting formed themselves into the Odontological Society. Others at a public meeting on the following day not desiring submission to, or dependence upon, the Royal College of Surgeons, formed the College of Dentists of England. Thus were instituted two bodies which contended together and competed as rivals until 1863, when they eliminated controversy and rivalry by a wise fusion. That there had been a deeply cut line dividing them may best be appreciated from the words of Mr. TOMES, quoted by the chairman of the Dental Board, congratulating both parties on their union and the Odontological Society on the liberal spirit with which they were amalgamating with men who had been in the habit of advertising, inducing them to give up that unprofessional practice, "to the general advantage of the profession." Meanwhile, the Medical Act of 1858 had set up the General Medical Council and had recognised and confirmed the power of the Royal College of Surgeons to confer qualification upon dentists. The charter of the Odontological Society was granted in the following year, and in November, 1871, the Council of the Royal College assigned to the certificate of the society the satisfactory and authoritative form of a diploma bearing the arms of the College and signed by its president. Gradually, however, the membership of the Odontological Society tended towards restriction to those holding diplomas, and the number of those not taking diplomas increased, necessitating a more satisfactory settlement of the anomalies of the dentist's profession which was arrived at in the Dentists Act of 1878. This followed the lines suggested by the Medical Act of 1858, and entrusted the compilation and custody of the Register to the General Medical Council, with duties attendant upon its maintenance to be carried out by a committee of five. Difficulties which then arose were freely ascribed to the fact that, strange as it may seem, the General Medical Council had not been consulted as to the framing of the Bill. Much confusion in the forming and maintaining of the Register indeed arose which appeared to the first Registrar almost insurmountable. Admissions of the undesirable from the point of view of effective dental practice were inevitable, and legal decisions construing the sections of the Act did not make its obscurities clearer for practical purposes. "As a result of these decisions," said Mr. ACLAND, "evils developed which gradually led to that third, final, and satisfactory solution of the troubles of the profession" which the Dental Board has now been called upon to administer.

The new Board initiates its work, as the medical profession will agree, in favourable circumstances. It is assured the goodwill and coöperation of the General Medical Council. It is composed of members representative of the interests which are to be served, skilled in administration and resolute to carry out a task the importance of which they recognise. Its chairman, a level-headed, experienced, and efficient administrator has defined the task, or the aim to which energies will be directed under his guidance, as twofold—"to guard the public from being practised upon by incompetent persons, and to see to it that there are a sufficient number of persons who will bring the most efficient dental treatment and advice within the reach of all who need it." This will not be an easy task to fulfil. It is not to be expected that ideal conditions of dentistry for crowded urban centres and for sparsely populated rural districts alike will be attainable in the near future or perhaps ever. Ideal conditions of life for all may indicate the final point towards which politicians, economists, medical men, and all others who have the welfare of their fellows at heart strive to shape their course, but, before attainment is arrived at, new ideals arise in a world in which science is in a perpetual state of forward movement. The institution of the Dental Board is a step forward in response to the dictates of science, and the effect will be of very great value in the promotion of the public health.

SIR ARTHUR PEARSON.

Sir ARTHUR PEARSON'S death in his 56th year from an unfortunate accident removes a great figure, for his name will go down as one who taught the blind not to consider blindness as an affliction but as a handicap to be wiped out by special training. His book, reissued lately under the title of The Conquest of Blindness, is striking evidence of what this indomitable spirit was able not only to visualise but to achieve. The Blinded Soldiers' and Sailors' Hostel at St. Dunstan's was one of the most successful of all the institutions for the relief of war disability. The Fresh Air Fund, founded in connexion with *Pearson's Weekly*, was the means of giving numberless poor children a recreative country holiday. His only son and heir, Mr. NEVILLE A. PEARSON, writes that his father's deepest concern was that the public should regard his work for the blind not merely as a personal effort of his own, but as a national trust placed in his hands by the people of the Empire. Continued support of St. Dunstan's and its associated hostels will be a direct monument to an incredibly busy and useful life, but his family have given a broader direction than this to any efforts that may be made in association with PEARSON'S honoured name. Their appeal for help for the blind is in no way confined to institutions which had direct origin in Sir ARTHUR PEARSON'S personal activities. All that can be done for the blind to lessen their disabilities in the course of life would have had PEARSON'S support, and any help rendered to the blind, and proffered in his memory, will be an act of appropriate recognition of a splendid career.

Annotations.

"Ne quid nimis."

MEDICAL HISTORY OF THE WAR.

THE first volume of the Official Medical History of the War, which has now been completed by Major-General Sir W. G. Macpherson, K.C.M.G., C.B., LL.D., will shortly be available to the public. The series, of which Sir William Macpherson is editor-in-chief, is so planned as eventually to comprise 12 volumes: General History of the Medical Services (4 volumes); Diseases of the War and the Medical Aspect of Aviation and Gas Warfare (2 volumes); Surgery of the War (2 volumes); Hygiene of the War (2 volumes); Pathology and Medical Research during the War (1 volume); Medical Statistics and Epidemiology of the War (1 volume). The main object in preparing a consecutive history is to present in an accessible form the material buried in masses of war diaries, administrative files, official reports and other documents, before they have been stored away and their existence forgotten except by a few. The first volume is a record in narrative form of the medical services in the United Kingdom and in garrisons overseas, with an account of the medical services in the operations against the German colonies in West and South-West Africa and in Tsingtau. Including labour units provision had to be made at one time or another for the medical services of forces with a total strength of nearly 3,500,000 operating in every variety of country and climate. A total maximum of 637,746 hospital beds were maintained in the United Kingdom and in theatres of war, and some 770 medical units of all kinds were mobilised and despatched to expeditionary forces. In addition 75 hospital ships or ambulance transports were equipped and administered by medical services in the United Kingdom, and 2,655,025 sick and wounded were brought to its shores for further treatment and disposal between August, 1914, and August, 1920. The personnel for medical services numbered at the time of the Armistice 144,514 officers and other ranks, most of whom joined the Royal Army Medical Corps and were trained in the United Kingdom. The volume will shortly be available through any bookseller at the price of £1 1*s*.

ALASTRIM.

THE question of the identity of alastrim with small-pox must still be regarded as unsettled. A paper by Drs. W. G. MacCallum and L. M. Moody on an Outbreak of Alastrim in Jamaica during the Autumn of 1920, published in the *American Journal of Hygiene* for July, contains much interesting matter, but offers no definite conclusion on this main problem. The authors state that "there are very few recorded instances of the transportation of this disease to other climates," so that special interest attaches to the fact that, about the time that this outbreak was in progress in Jamaica we referred[1] to an outbreak of alastrim occurring in East Anglia. The Jamaica outbreak was on a much more extensive scale; in September, 1920, the number of cases in Kingston at any one time was variously estimated at 400 to 700, of which about 325 were isolated in a building outside the city. The disease appeared in Kingston in May, 1920, and is believed to have been imported from Cuba or possibly from South America, although the exact mode of introduction was not determined. In all 2333 cases were reported, the majority of them among the native population. The clinical history of the disease given by Drs. MacCallum and Moody corresponds fairly closely with that which came under observation in this country, the main points of divergence from typical small-pox consisting in the fact that although the initial symptoms might be severe, the disease was on the whole of extraordinarily mild character, the mortality-rate hardly exceeding 0·5 per cent. of those attacked. Backache was rarely severe, and the eruption, which in the vesicular stage was not umbilicated, came out in successive crops. On recovery no deep pitting or scarring of the skin remained. The marked odour so characteristic of small-pox was entirely absent.

The relation of vaccination to the disease is of special importance. Dr. Moody, who made a careful study of the question in 206 adults and 80 children, found evidence in the former class that the proportion of severe cases was higher among the non-vaccinated, but adds that since none of these people had been vaccinated more recently than 20 years ago, not much stress can be laid upon his figures. Among children he found a general tendency to a milder type of the disease especially marked in the vaccinated group, among whom not a single severe case occurred. He further states that he vaccinated 20 persons who had been in contact with the disease without one instance of subsequent infection; while in several households that came under observation unvaccinated members of the family contracted the disease while the vaccinated escaped. On the other hand, of 60 cases vaccinated at varying periods during convalescence, 45 "took" to some extent, although in no instance did they give a typical reaction as compared with normal controls. It was not found possible to transmit the disease experimentally to rabbits or calves. Perhaps the most interesting section of the report is concerned with the histological appearances of the skin in alastrim, as studied in sections of pocks excised in various stages of development. From the descriptions given, as well as from the excellent photographs, clinical and microscopical, with which this study is illustrated, it would seem that the stages met with in the evolution of the eruption follow more closely those observed in vaccinia than in small-pox. Comparison of the results of Dr. Moody's investigation with the illustrated monograph on the Histology of Vaccinia by Dr. S. M. Copeman and Dr. Mann, published as an appendix to the Report of the Medical Officer to the Local Government Board for 1902, confirms this impression. Although allied to both small-pox and vaccinia alastrim obviously cannot be regarded merely as a mild form of varioloid in which the eruption is likely to be sparse; a marked characteristic of alastrim is the occurrence of a more or less confluent eruption in a patient who in most instances is never seriously ill.

[1] THE LANCET, 1920, ii., 1153.

THE MORPHOLOGICAL ASPECT OF INTELLIGENCE.

IN more than one place in Thomas Hardy will be found a curious reflection on the alteration which has taken place among Western civilisations in the criterion of male facial beauty. We no longer, he has pointed out, adopt the standard of pure perfection of line and surface which satisfied the Greeks, but demand before we call a face beautiful that it should bear the marks of intellectual and emotional virility and action, the scars, perhaps, of mental and spiritual conflict. If it be possible to arrive at some association between bodily form and intellectual character, we may presume that our criterion of bodily beauty might change in the same way and no longer rest as at present, partly on a purely artistic basis, and partly on the idea that a body which can achieve bodily, and mostly athletic, success must be held to be beautiful. No settled opinion has been reached even in this relatively simple field, for Carpentier, who boxes supremely, is beautiful, while Shrubb and Dorando, who run like deer, are not. It is therefore not to be wondered at that the difficult problem of discovering whether there is any connexion between bodily form and intelligence is still far from solution, and an interesting discussion[1] by Dr. Santi Naccarati is a welcome contribution to

[1] Archives of Psychology, August, 1921.

its consideration. The particular point which he has investigated is whether the relation of the volume of the trunk to the length of the limbs can be correlated with the intelligence, as ascertained by one of the several systems now in profuse use in America. Those with a relatively small trunk and long limbs are, after Viola's classification, microsplanchnics, while those with a trunk excessively developed in comparison with the arms and legs are macrosplanchnics. Viola held that the microsplanchnic, departing as he does as far as possible from the infantile habit of body, may be regarded as hyperevolute, and for this and other reasons of similar validity the presumption arises that intelligent individuals are more likely to be found in this group than among the macrosplanchnics, which tend to maintain the proportions of infancy. The microsplanchnic is to be looked upon also as having a relatively more active thyroid, owing to the connexion between the thyroid and growth in length. Generally speaking, therefore, Dr. Naccarati concludes that macrosplanchnics excel in instinctive reactions such as eating and sleeping, which satisfy the somatic self, and in capacity for prolonged steady physical and mental work, while microsplanchnics are more intelligent in the ordinary sense, have greater intuition and mental agility, are more easily exhausted, and excel in connexion with the psychic self. Whether the rather meagre data presented by the author adequately confirm these interesting propositions is questionable. On 75 subjects the coefficient of correlation between his "morphologic index" (a measure of microsplanchnicity) and intelligence is only +0·36; on the ground that the correlation of height-weight ratio with morphologic index is +0·7, he uses the two measures alternatively; in 221 subjects the correlation of intelligence with height-weight ratio is +0·23—figures which would hardly justify examinations by anthropometry. We hope, therefore, that it will be possible for some determined macrosplanchnic to verify, as so often happens, the microsplanchnic's intuition. If his intelligence has led him rightly, it suggests that the common criterion of beauty has a more spiritual basis than might be suspected.

THE MENTAL EXPERT IN THE MAGISTRATE'S COURT.

THE need for the modification of certain social demands to meet certain individual cases and the provision of more sympathetic treatment for those who find it difficult to conform to laws made for the common good has been prophesied by Samuel Butler, Brieux, and John Galsworthy. For even where the writings of these idealists are designed to show abuses and anomalies in our system their widespread popularity is at least an indication of the dawn of a wider view. Dr. J. T. Dunston returns from a recent visit to America with the impression that there it is the individual who really matters, not the crime, and gave to the Medico-Psychological Association, at a meeting which we report on p. 1275, a brief account of the part now played by the psychologist in transatlantic law-courts. To the same meeting Dr. M. Hamblin Smith, medical officer at Birmingham prison, offered some pregnant suggestions arising out of his experience of the working of a scheme initiated in Birmingham in 1919. This scheme for dealing with accused persons brought before the magistrates in order to secure, if possible, treatment in accordance with their mental condition was outlined in THE LANCET [1] a year ago. A report on the continuation of this work presented to the justices of Birmingham by their General Purposes Committee, defines the relative functions of Dr. Hamblin Smith and Dr. W. A. Potts, whose lecture on the Relation of Crime and Delinquency to Heredity, Environment, and Disease appeared in our columns recently.[2] According to the report, the detention of the offender on remand for a period, which has been usually of a week's duration, has enabled the medical officer to give helpful information to the court. In cases where it has not been necessary or desirable to remand the offender to prison, the case has been adjourned for medical examination, a procedure with special convenience in the case of children. Dr. Potts expresses regret that more cases should not be referred to him, and suggests that reference should not be confined to occasions where it appears to be necessary. Dr. Hamblin Smith criticises the objection raised by some persons to the remanding of cases which might be admitted to bail. He explains that the examination into the mental condition of offenders is necessary, and can best be made in an institution where they can be under close observation. Those examined by him are treated in the remand department of the prison under what he describes as hospital conditions, the idea of prison being kept out of sight. It is to be hoped that the Birmingham experiment will be tried before long, on a larger scale and in other cities, under the direct authority of the Government.

[1] THE LANCET, Nov. 13th, 1920, p. 1019.
[2] THE LANCET, Nov. 26th, 1921, p. 1095.

RELATION OF THE SPECIES OF RAT-FLEAS TO SPREAD OF PLAGUE.

THOSE who are engaged in its study find the epidemiology of plague a most absorbing problem in view of the many variable factors which come into play. An investigation into the conditions commonly needed for an epidemic of human plague was carried out in a very thorough manner by the Plague Commission in the early years of this century. Since then research work, although greatly retarded by the war, has been going on steadily throughout the world wherever plague has manifested itself. We referred recently to the work of Kunhardt and Chitre, and have published an account of the outbreaks in some rural districts of South Africa. Attention is now drawn to the work of Major F. W. Cragg, I.M.S., who has further advanced our knowledge by a careful scrutiny of the species of fleas that live on the rats in various parts of India. In the October number of the *Indian Journal of Medical Research* he has contributed some further preliminary observations in which he discusses the geographical distribution of the Indian rat-fleas as a factor in the epidemiology of plague. The Plague Commission workers recognised that there were several varieties of fleas on rodents in the East and they were aware that *Xenopsylla cheopis* was the most efficient carrier of the virus. Major Cragg goes into the matter much more thoroughly and shows that there are two other species met with—namely, *X. astia* and *X. brasiliensis*, and that the capacity of each of these three species to spread plague is not the same. The two most widely distributed species in India, cheopis and astia, vary greatly in this respect, the former being an efficient carrier of the infection, while the latter has little capacity to act as a vector of plague. Major Cragg, therefore, has made attempts—as yet, it is true, on no very large scale—to ascertain the species of rat-flea that predominates in heavily-infected areas, as also in districts which have escaped the infection or suffered only slightly from it during the present pandemic.

In response to his requests, Major Cragg has received for examination 107 separate collections of local rat-fleas from various provinces, including the Punjab, the Presidencies of Bombay and Madras, Burma, and Central India. These collections comprised 17,358 rat-fleas, of which 9330, or 53·9 per cent., were *X. cheopis*; 6241, or 36 per cent., were *X. astia*; and 1334, or 7·7 per cent., were *X. brasiliensis*. In addition there were 367 specimens of *Ceratophyllus* and 67 *Leptopsylla musculi*. The Punjab contributed 5688 of the rat-fleas, Bombay Presidency 5183, Madras Presidency 4491, Burma 1697, and Central India 280. The majority of the rat-fleas from the Punjab and Bombay were *X. cheopis*; from Madras and Burma *X. astia*, and from Central India *X. brasiliensis*. Roughly, 90 per cent. of the fleas sent for examination belonged to the two species cheopis and astia. Major Cragg frankly admits that his observations so far

are neither sufficiently numerous nor evenly enough distributed to give definite results. The collections of rat-fleas sent to him varied greatly in size, and at best represented only a portion of the country; they were not made in a manner calculated to eliminate the error due to the uneven distribution of the species in the particular locality they represented. Nevertheless, the results are striking. Though the nature of the records is not well adapted for the application of the statistical method by which such a problem should be approached, yet the observations, in Major Cragg's opinion, point very strongly to a close relation between the predominance of *X. cheopis* and a high plague mortality, and that that flea is "the true plague flea" of India; on the other hand, *X. astia* is the predominant rat-flea in those areas which are known to have remained free from plague epidemics, or which have only suffered slightly from the disease. The liability to severe epidemics of plague in those regions in which *X. cheopis* predominates seems fairly clear, as also does the absence of liability to such epidemics in areas where *X. astia* is the predominating rat-flea. In his promised further report we hope that Major Cragg will correlate these facts with other factors known to influence the incidence of infection—e.g., the kind of rat inhabiting the areas, the number of fleas per rat throughout the year, and the climatic conditions of temperature and humidity which influence the breeding activity of the fleas.

To justify the full application of statistical methods it will be necessary to make a wider series of observations under definitely chosen conditions. Large batches of fleas collected at the same time of the year, preferably during the plague season, are required and the stations selected should be within fairly narrow geographical limits. When this systematic information has been obtained Major Cragg hopes to make a further and more complete report on the subject. He points out the importance of having these rat-flea areas mapped out where *X. cheopis* or *X. astia* are respectively predominant, just as the tsetse-fly belts have been mapped out in Africa. It would, he says, be unnecessary to take elaborate and expensive measures against plague in a district where the predominant rat-fleas were not a species which acted as vectors of the infection. The significance of an imported case of plague may depend, therefore, in a large measure, on the local species of rat-fleas.

AMMONIA DERMATITIS IN INFANTS.

Dr. C. V. Cooke[1] of the St. Louis Children's Hospital, remarks that the characteristic lesions of the diaper region in infants have long been recognised and described under a variety of names. Their differentiation from syphilitic lesions was first clearly made in 1905 by Jacquet, who divided them into simple erythematous, erythemato-vesicular or erosive, papular or post-erosive and ulcerative forms, all of which are stages of one process and may coexist in the same patient. The features which distinguish these eruptions from those of congenital syphilis were shown by H. G. Adamson[2] in 1908 to be as follows: (1) limitation of the eruption to the convex surfaces of the diaper region and the absence of lesions on the face, palms, and soles, and at the anal margin; (2) absence of the coppery colour of syphilitic eruptions, and absence of other signs of congenital syphilis, such as snuffles, rhagades, and glandular enlargement; (3) variation in the course of the erythematous lesions, which frequently tend to disappear without anti-syphilitic treatment. The lesions are generally regarded as identical with those due to ammonia irritation, but opinions differ as to the source of the ammonia. Leopold incriminated the soap alkali remaining in diapers from insufficient rinsing, but the usual explanation is that there is a nutritional disorder with acidosis and increased excretion of ammonia in the urine. A bacteriological study of infants with ammoniacal diapers conducted by Dr. Cooke showed that a urea-splitting organism could be isolated from the stools in a number of cases, and that the formation of the ammonia in the diapers could be prevented in all such cases by the use of an antiseptic such as mercuric chloride, which caused a prompt disappearance of the ammoniacal odour and a rapid regeneration of the skin lesions.

[1] American Journal of Diseases of Children, November, 1921.
[2] British Journal of Children's Diseases, 1908, v., 13.

THE IMPORTANCE OF LACTOSE FERMENTATION.

IT is now almost sixty years since Davaine demonstrated the causal relationship of bacteria to disease, and although these years have been filled with the most active and productive research there is yet a great deal about the practice of bacteriology that is empirical. When we study the work of the systematists it is impressed upon us how imperfect the subject is, and what great lacunæ remain in our knowledge which the labours of the future will have to fill. Nowhere is this empiricism more marked, perhaps, than in classification, and where any attempt is made to reduce the multitude of forms now known in human bacteriology to a systematic basis we are confronted by a most disturbing variety of tests directed towards this end, of whose exact mode of action we are generally ignorant. It must come as a shock to a student of the exact sciences to learn that one of the most important criteria upon which the bacteriologist relies to aid him in the identification of micro-organisms is the ability of these to retain a dye after subsequent treatment with iodine and washing in alcohol. This, however, is the case; Gram's method of staining being firmly established in bacteriology as a differential criterion of the first importance. Morphology, oxygen requirements, and various biological activities, all have their place in this vexed subject, and amongst these the fermentation of sugars is of great importance. Nowhere is this more so than in the vast collection of types resumed under the coli-typhoid group, and here it is the action of the organisms upon lactose which demands most consideration. There is, perhaps, no single test in the whole field of bacteriology which gives us so much information as does the fermentation of this sugar by a member of the coli-typhoid group. By what might be almost a divine provision we possess, in lactose, a sugar whose fermentation divides these organisms into two great classes, one of which contains all the important pathogenic agents of infective intestinal diseases, whilst the members of the other group are, in the main, relatively harmless. Thus the non-lactose-fermenting group includes the causal organisms of the typhoid and paratyphoid fevers, bacillary dysentery, and acute bacillary enteritis, to mention the more important, whilst among the less notorious members are the pneumo-bacillus, the psittacosis bacillus, and various rat and mouse viruses.

The other great group, constituted by organisms which ferment this sugar, is that of *Bacillus coli* and its numerous sub-types, all of which, however, are of minor importance by comparison with the highly pathogenic species met with amongst the non-lactose fermenters. Although this line of demarcation does, in a general way, separate the pathogenic species from the non-pathogenic, yet, like most classifications in bacteriology, it is only relatively exact. There are non-lactose fermenters which are saprophytes of no greater importance than the *B. coli*, whilst others occupy a middle position; such as these are Morgan's No. 1 bacillus, which is thought to bear a relationship to enteritis, especially that of infants, but whose exact significance is still in dispute. The proteus bacilli, so active in organic putrefaction, and *B. fæcalis alkaligenes*, often a harmless saprophyte but capable of invading the blood stream and of producing a typhoid-like malady, also belong to this class. On the other side of the dividing line the colon bacilli are to a certain extent pathogenic, and play a not inconsiderable part in many intestinal inflammatory

conditions—appendicitis and peritonitis. But, perhaps, their more especial interest lies in their relationship to public health, as providing evidence of the contamination of water-supplies by fæcal matter. Any study of intestinal bacteria brings to light the varying nature of the flora of the normal intestine, which shows noteworthy changes from day to day and from season to season. Moreover, with the changes in the intestinal juices and variations in the rate of passage of the intestinal contents which are induced by disease, we must expect alterations in the fæcal flora, and probably this is why in dysentery we find organisms closely related to, but not identical with, the causal organism coming to the fore with such frequency. Correlated with other variations in the condition of life we should expect changes in the intestinal organisms, and it must be conceded that standards which apply to the average person in this country may not be accurate under changed conditions, and that it may be necessary to establish the normal by fresh research where new communities come under observation. An investigation of this sort has been undertaken by Dr. H. L. Duke, whose results we published last week, on the fæcal flora of whites and natives in Uganda. The data given are not sufficiently numerous to allow of permanent deductions, but they are sufficient to show that there is apparently a high incidence of the non-pathogenic non-lactose fermenters, whose exact identification is a matter of importance in view of their tendency to cause confusion with the virulent organisms so frequent in this class.

It is an interesting problem to what extent the presence of one property in an organism demands the presence of another, and vice versa. We see how often inability to ferment lactose is associated with the power of invading the human body. It is also a general law, observable not only in the class of organisms which we are now discussing, but also amongst the streptococci, that in a wide way there is an association between pathogenicity and inability to attack and ferment many of the carbohydrates. The idea is a very attractive one, that this represents a fundamental divergence of a common stock into two branches—the one mainly a saprophytic group and existing largely on carbohydrate foodstuffs; the other preferably parasitic, and sacrificing ability to utilise carbohydrates to gain the power of attacking protein substances, which is essential to a life of parasitism.

ESSENTIALS OF MENTAL HYGIENE.

THE Board of (Lunacy) Control has invited the chairmen of visiting committees and the medical superintendents of public mental hospitals to meet the members of the Board in conference at the Ministry of Health on Jan. 19th next, with the object of considering how to improve lunacy administration and the treatment of persons suffering from mental disease. The letter summoning this conference points out that although it is important to reduce expenditure it is essential, and in the end economical, to do everything practicable to prevent mental disease and to cure it when it occurs. The Board desires to exchange views with those engaged in the actual administration of mental disease. If this conference proves worthy of the circumstances which have led up to it, we are on the verge of better things in the field of psychiatry, and it is not without significance that this moment has been chosen for the foundation in France of a League of Mental Hygiene, whose first *Bulletin*[1] has just appeared. This League has set itself to attack the problem from all sides and its first endeavour is to provide treatment for uncertifiable and incipient cases of insanity. The authorities of l'Asile Clinique in Paris have already been persuaded to make provision for voluntary boarders, and several out-patient clinics have been established there and in other parts of France. Meanwhile, 10 commissions have been appointed to investigate and report on other aspects of mental hygiene. Among these, the problem of ætiology figures largely—the relation of toxic states to mental disease, the effects of alcoholism, drugs, and other external toxins, psychopathic predisposition, the effects of different occupations, and the choice of occupation in accordance with mentality. The problem of protecting society against the example and other dangers inherent in the mental perverts who make up the class of habitual criminals is to be considered, and that of the education of defective children. The adequate teaching of psychiatry, and the propagation of research are also aims which the League hopes to further. Finally, it has set out to educate the public. So much insanity is avoidable that a more general understanding of the causes going to produce it may have far-reaching effects. The League aims at affiliation with similar societies in other countries where the needs are very similar. The sufferer from early mental disease is the most neglected type of patient we know. At a general hospital the verdict "functional" is often equivalent to a plain statement that the patient must help himself. Existing staffs have neither the time nor the special ability required for the treatment of neuroses, drug habits, and functional mental disorders of types which are to be met every day. The Medico-Psychological Association of Great Britain and Ireland has done much to stir the public conscience in these matters; the French League of Mental Hygiene is a movement in the same direction whose progress will be followed with keen interest in this country.

[1] Bulletin de la Ligue d'Hygiène Mentale. Nos. 1–2. July to October, 1921. Edited by Dr. Genil-Perrin, 99 av. de la Bourdonnais, Paris VIIe.

THE VALUE OF PERIODIC HEALTH EXAMINATIONS.

AT present the medical practitioner refrains from paying a professional call on a family of patients until a sick member or his relatives regard an attack of illness as serious enough to demand medical care; if these necessary visits were supplemented by periodical medical examinations of each member of the families in the doctor's practice, much ill-health could doubtless be avoided. On this assumption the Life Extension Institute of New York has been organised. For a collective fee or an annual subscription examination of the insured persons is obtained at periodical intervals, the examination being conducted by specialists and a collective report on the patient being made. In a recent annotation we noted that the Metropolitan Life Insurance Company of New York had arranged for skilled nursing of many of their sick clients, and for visits by public health nurses at the expense of the company. The same enterprising company have been carrying through another interesting experiment, the results of which have recently been described by Dr. A. S. Knight, its medical director. This experiment, which has been on trial from the year 1914 onwards, consists in making available for the policy-holders of the company a periodical medical examination, which has been undertaken for the company by the Life Extension Institute. Leaflets were issued with every annual premium notice urging the examinations, telling the policy-holders that the results would be strictly confidential and, particularly, would *not* be revealed to the company, and that the insurance would not be affected in any manner. Under this scheme some 95,000 examinations have been made, or 7·8 per cent. of the estimated number of eligible requests for examination. Of this number over 5987 males were available for statistical study, having been examined during 1914 and 1915, a long enough interval to allow of comparisons. The results of this comparison are to some extent rendered liable to the errors of small numbers by the necessary division into smaller groups. The aggregate result appears to have been that in the year 1915–16 the cases examined by the Institute showed a mortality of 39 per cent. of the American Experience Table,

while the total ordinary policies showed a mortality of 70 per cent. During the second year, while the total mortality remained the same, the mortality on the lives examined increased from 39 to 47 per cent. It appears, therefore, safe to conclude that "the benefits of the life extension examinations are pretty well limited to the years immediately following the examinations, and run out at the end of about five years." Dr. Knight's report goes on to show that the company in paying for these examinations has had its principal returned, and has made a 200 per cent. profit on the investment, during a period of approximately five years. This is on the assumption that the subsequent experience on these lives does not exceed the experience expected according to the American Men Table.

Dr. Knight points out in conclusion the reservations needed in arriving at even tentative inferences. They are reservations common to nearly all attempts to measure statistically the effect of social measures. The results do not, nor could they, allow for the factor of self-selection. The group of policy-holders reported on elected to be examined, sought out the opportunity to be examined, and returned periodically for examination, even though many of them showed no serious impairment. These facts denote that they were persons taking their health seriously, and who, apart from medical examination, would be likely to adopt measures to protect their health. In these respects there may have been initial bias in the special group which colours the general results, and it is not possible to measure the effect of this fact. But we may agree with Dr. Knight that it probably does not negative the highly favourable results shown. On the whole the experiment has been of great value, and even if the extent to which money has been saved by the examinations and action taken on these cannot be fully demonstrated, the system itself is likely to appeal to the insured person as well as the company, and may be imitated in other countries.

MEDICINE IN ART.

ACCORDING to Sir Berkeley Moynihan, who discoursed on "Medicine in Art" to a social gathering of Fellows of the Royal Society of Medicine and their friends on Dec. 7th, the proverbial hideousness of gargoyles was merely an exaggerated portrayal of abnormal conditions. The celebrated gargoyle of the church of Santa Maria Formosa, at Venice, erroneously described by Ruskin as "leering in bestial degradation" typical of the evil spirit of Venice in the time of her decadence, was immediately recognised by Charcot as the facies of hystero-epilepsy. This was the condition so frequently described and depicted in the Middle Ages as of one "possessed of evil spirits," the exorcism of which was the subject of many pictures by the old masters. The attitude of the victim, characteristic of hystero-epilepsy, was more or less accurately portrayed in many celebrated pictures—for example, Reuben's "Transfiguration," in which the boy "possessed of evil spirits" was drawn with spine arched backwards, forearms flexed and pronated, and hands firmly clenched. Sir Berkeley Moynihan showed pictures in which the artist had exhibited great anatomical knowledge in the portrayal of emotions. Sir Charles Bell, the medical artist, had drawn the face of the father in the Laocoon when he wished to portray "anguish and the sense of impending death." Many diseases only recently recognised had long been recorded in art. The Egyptian god, Ptah, whose images date back to 3000 B.C., was a typical achondroplastic dwarf, and so also was the god Bess, who presided at births. In the Bayeux tapestry Turold, the horse-holder, was an achondroplasiac, and many pictures, such as Velasquez's "Antonio the Englishman," showed achondroplastic dwarfs in charge of animals. Deformities, such as talipes equinovarus and genu recurvatum, were represented in early Egyptian art, while the bust of Æsop showed the angular curvature of Pott's disease. Early Roman bronzes even portrayed the condition of hydrocephalus. One of Holbein's canvases was a faithful reproduction of rhinophyma. The late Sir Spencer Wells had always said that the famous portrait of Mary Tudor depicted the typical facies of a woman with an ovarian cyst. The craft of the surgeon was also represented in art—the operation most frequently portrayed being circumcision. Sir Berkeley Moynihan showed a picture of the removal of a sebaceous cyst by a surgeon whose diploma hung on the wall behind the patient, while he carried another in his hat. A picture in the Sistine Chapel depicted the first woman surgeon performing circumcision, while another, by Moroni, even showed an early appliance for dropped-foot, the result of a wound of the external popliteal nerve.

The address was learned, amusing, and suggestive, and was very highly appreciated by the audience.

HYGIENE BY EXAMPLE.

A SOCIETY, entitled L'Hygiène par l'Example, has been formed in France, with Mr. Léon Bourgeois, former President of the Republic, as its first president, Dr. Marchoux, professor at the Pasteur Institute, as general secretary, and Mme. Léon Mazart as assistant secretary. As its title implies, the object is not to deliver lectures or distribute pamphlets but to preach by example. Therefore, wherever its members can obtain admittance they endeavour to introduce some modification that will tend to improve the health of those concerned. In rural districts especially, and in elementary schools, there is much need of sanitary improvement. Thus, for example, a boys' school was discovered with no water-supply and no washing accommodation. Thereupon a hose and pump was installed at the communal wells, and the boys were drilled in pumping water to the school and in giving themselves a thorough wash every day. Then, again, in Paris there is a school for weakly girls in the rue des Épinettes, a crowded neighbourhood. Thereupon the society arranged for a class-room to be built near, at the fortifications in the Boulevard Bessières, where there is a large expanse of open air hard by. The room was well heated and well ventilated, care being taken to distribute the cold air as it entered and prevent any direct draught. In summer lessons are given in the open air and the pupils exposed as much as possible to the direct rays of sunlight. They are all carefully washed and abundantly fed. Statistics are published setting forth the increased height and chest measurements resulting from all this care, and this is truly termed a practical demonstration of hygiene by example. There may be many occasions in Paris and elsewhere when outside help or advice supplies the final stimulus necessary to action, and thus a long meditated reform is realised.

THE INTERNATIONAL STANDARDISATION OF SERA.

AT the conference which was started by permission of the Government at the Ministry of Health on Monday afternoon last, the President of the Health Committee of the League of Nations, Prof. Madsen of Denmark, presided. The various countries whose leading workers in serological problems had been invited to attend were enumerated in our columns last week, and the following is a list of the corresponding delegates.

Austria: Dr. R. Mueller, Professor of Serology at the University of Vienna.

Belgium: Dr. Renaux, Deputy Director of the Pasteur Institute at Brussels.

France: Dr. Louis Martin, Sous-Directeur de l'Institut Pasteur, Paris; Dr. Dopter, de l'Institut Pasteur, Paris; Dr. Cotoni, de l'Institut Pasteur, Paris.

Germany: Prof. W. Kolle, Geheimrat, Director of the Institute of Experimental Pathology, Frankfort; Prof. H. Sachs, Director of the Cancer Research Institute, Heidelberg.

Great Britain: Sir Frederick Andrewes, M.D., F.R.S.; Dr. H. H. Dale, F.R.S.; Prof. W. Bulloch, M.D., F.R.S.

Italy: B. Gosic, Chef de Laboratoire de Bactériologie, Direction Générale de Santé, Rome.
Japan: Dr. M. Miyajima, Kitasato Institute, Japan.
Poland: Dr. L. Hirszfeld, Director of the State Serum Control Institute, Warsaw.
Switzerland: Dr. R. Doerr, Professor of Hygiene and Bacteriology at the University of Basle.

Dr. L. Rajchman, Medical Director, League of Nations; and Dr. F. Norman White, C.I.E., Chief Epidemic Commissioner, League of Nations, acted as secretaries, while the following British technical advisers attended the conference:—

Medical Research Council: Sir Walter Fletcher, K.B.E., M.D., F.R.S., Secretary of the Medical Research Council; Prof. G. Dreyer, M.D., F.R.S.; Dr. M. H. Gordon, C.M.G.; Prof. J. C. G. Ledingham, C.M.G., F.R.S.; Dr. P. Fildes; Capt. S. R. Douglas, I.M.S.
Ministry of Health: Col. L. W. Harrison, Specialist Medical Officer for Venereal Diseases; Dr. A. Eastwood (Pathological Laboratory.)
War Office: Sir William Leishman, K.C.M.G., C.B., F.R.S.

The conference came to a conclusion on Wednesday afternoon with the reception in plenary congress of the reports of the six subcommittees appointed to consider the international standardisation of sera in connexion with diphtheria, dysentery, various types of meningococcus and pneumococcus, syphilis, and tetanus.

AMŒBIASIS.

FROM the general survey by acknowledged experts of the significance and treatment of amœbic dysentery, which took place at the Section of Tropical Diseases and Parasitology of the Royal Society of Medicine on Dec. 5th, several interesting conclusions emerged. A point emphasised by Prof. L. S. Dudgeon and Sir Leonard Rogers was the present rarity of liver abscess, a complication which in pre-emetine days was computed to affect one in seven cases of amœbic dysentery. Another point generally agreed upon was that, although emetine is almost a specific in the acute stage of amœbic dysentery, it had not proved so efficacious in the more chronic and intractable clinical forms of the disease met with during the war and since the cessation of hostilities in war pensioners. The toxic effects of large doses of emetine have apparently been exaggerated; they occur only in specially susceptible individuals, and take the form of pareses of certain groups of muscles, peripheral neuritis, and a branny desquamation of the skin. Some difference of opinion still exists as to the value of the exhibition of the double iodide of emetine and bismuth; Dr. P. Manson-Bahr contended that where attention is paid to subsidiary methods, such as intravenous injection of neosalvarsan and lavage of the large bowel by eusol and to details of the dietary, these drugs produce good results in 70 per cent. of cases. Red meat and starchy foods should be avoided during convalescence, and a carefully regulated regimen should be drawn up for each patient. The adoption of more uniform standards of treatment and of recording results are obviously desirable if reports from different workers are to be compared. Amœbiasis can remain latent for a much longer period than is generally supposed, and relapses have been recorded after a quiescent period of six years. It would seem that though the mortality of the disease has diminished enormously since the introduction of emetine, an absolute cure can only be hoped for when the diagnosis has been made early and the treatment has been prompt and thorough.

GAS INFLATION OF THE PERITONEUM IN RADIOGRAPHY.

OXYGEN-DISTENSION of the peritoneal cavity for radiographic purposes was introduced in 1913 by E. Weber[1] and has been taken up since in Italy and America. J. E. H. Roberts[2] in this country recently gave some of his results with a plate showing spleen, kidney, uterus, and mesenteric cysts clearly defined by this method. At a meeting of the Section of Electro-Therapeutics of the Royal Society of Medicine held on Dec. 9th, Dr. Carelli of Buenos Aires described the method as elaborated in his hands. He demonstrated a number of skiagrams showing the outlines and position of the liver, spleen, pancreas, uterus, ovaries, and Fallopian tubes. In some of the skiagrams appeared, in addition, the distended gall-bladder and the kidneys. In cases of cirrhosis of the liver the irregular outline of the organ was clearly visible. In cases of hydatid disease cysts in the liver and spleen were to be seen. In cases of cholelithiasis calculi were revealed. The demonstration, in fact, made it clear that it is possible by this relatively new method of radiographic examination to obtain information on the position, size, shape, and relations of the abdominal viscera over and above that given by the methods generally used. For injection Dr. Carelli prefers carbon dioxide to oxygen, and he advises the removal of the gas after the radiographic examination. As the outlines of the kidney are not always shown by the X rays after distension of the peritoneal cavity with gas, Dr. Carelli conceived the idea of injecting gas into the peri-renal fat and producing an artificial emphysema around the kidney. He has performed this operation several times with success, and has been able to demonstrate the kidney with the same clearness as the other abdominal viscera. He has succeeded thus in showing the suprarenal gland, the first time, we believe, that this organ has been rendered visible during X ray examination. Skiagrams were shown at the meeting in which the outlines of kidney and suprarenal, both normal and abnormal, were clearly indicated. The attendance at the meeting was evidence of the keen interest which is being evinced in this addition to the radiographer's diagnostic equipment.

[1] Fortschr. a. d. Geb. der Röntg. str., 1913, xx., 453.
[2] Brit. Med. Jour., 1920, ii., 742.

NEW LIGHT ON ANGINA PECTORIS.

THE careful and painstaking work of Sir Charlton Briscoe on the origin of the anginal syndrome, as set out at the Harveian Society in an address which we print this week, throws new light on an attractive subject in which speculation has been rife. In the discussion Sir William Willcox agreed that pain resulting from over-fatigue of certain respiratory muscles might be referred to areas corresponding to those which occur in angina pectoris, but he could not admit muscular fatigue to be a complete explanation of the painful symptoms of angina. Sir James Mackenzie has always stoutly maintained that the gripping pain of angina is due to spasm of the intercostal muscles and therewith an effect and not a cause of angina. If the pain of angina pectoris were due to fatigue of certain respiratory muscles, why, Sir William Willcox asked, did not anginal attacks accompany illnesses such as bronchitis, pneumonia, laryngeal obstruction, in which these muscles were submitted to very great over-exertion? Typical attacks of angina appeared to follow slight exertion where the question of muscular fatigue could hardly arise. However produced, the pain of angina is a condition for which any suggestion of relief would be welcome. In the *Bulletin* of the French Academy of Medicine of Oct. 25th, Prof. T. Jonnesco, of Bucharest, recorded a severe case of angina in a man aged 54, who presented the typical symptoms, and for whom life had become almost insupportable owing to excruciating attacks of pain induced by walking or the least emotion, and intensified by slight changes in the weather. The patient showed dilatation of the aorta, together with chronic bronchitis and emphysema. The Wassermann reaction was positive. Anti-syphilitic and other forms of medical treatment having failed to give relief, he decided to submit to surgical measures. Under dorso-cervical spinal anæsthesia Prof. Jonnesco divided the left cervico-thoracic sympathetic nerve on June 13th, 1921. The relief was immediate, and during the months of July to October

the patient remained free from pain and was able to live a normal active life. Prof. Jonnesco is to be congratulated on this his second successful operation for angina pectoris. Whether a nerve such as this would be accessible to alcohol injection is a point which might be put to the proof, but the course of the sympathetic may be too near important vessels and ducts to render such a simple procedure feasible.

THE ASSOCIATION OF TYPHUS VIRUS WITH BLOOD PLATELETS.

STARTING from Charles Nicolle's statement that the leucocytes are the principal if not the only elements in the blood capable of transmitting the virus of typhus fever, Dr. J. Ségal has recently performed a series of experimental investigations in the bacteriological department of the Lister Institute into the site of the virus. Assuming that Nicolle's statement is true, Dr. Ségal argues that it should be possible to obtain the virus in a concentrated form by producing a leucocytic exudate in infected animals. Guinea-pigs which had been infected with the typhus virus were given intraperitoneal inoculations of sterile broth on different days of the disease, and the peritoneal fluid was withdrawn three to five hours later. In no case did the inoculation of leucocytes from 4–5 c.cm. of the exudate (containing over 50,000 leucocytes per c.mm.) produce infection in guinea-pigs, whereas the blood and the brain from the same animals were shown to be infective. The work of Kusama, who claims to have demonstrated an intimate connexion between the platelets and the typhus virus in the blood stream, suggested experiments on guinea-pigs which, in Dr. Ségal's opinion, have given complete confirmation of these findings.

The plasma obtained cell-free by prolonged centrifugation of citrated blood proved non-infective in doses of 5–6 c.cm., whereas the inoculation of platelets invariably produced infection even with such a small quantity as could be obtained from 1·5 c.cm. of blood. Thus, by the separation of the platelets from virus-containing blood a high concentration of the virus can be achieved. With this virus it has been found possible to infect a guinea-pig by the inoculation of a small quantity into the anterior chamber of the eye, and by intra-testicular injection. It has also facilitated the experimental infection of lice (*Pediculus humanus*) conducted by Dr. Ségal jointly with Mr. A. W. Bacot. The method used was the injection per rectum of the platelet layer of centrifuged blood from typhus-infected guinea-pigs, and subsequently the re-passage of the virus from these lice into other guinea-pigs.

At a recent laboratory meeting of the Pathological Section of the Royal Society of Medicine Mr. Bacot gave a fascinating demonstration of the technique adopted by him, following the method described by Weigl,[1] of feeding lice infected with the virus of typhus fever by rectal injection. The alimentary tract of lice is normally sterile, and experience shows that its contamination with bacteria results in the speedy death of the insect: it is therefore necessary to adopt measures to avoid the contamination of the gut when feeding by the rectal passage. After two to four minutes immersion in 2 per cent. lysol Mr. Bacot transfers the lice to sterile water and thence removes them to filter-paper placed in Petri dishes to recover. To inject the meal of whipped human blood the louse is held under a slip of paper on a glass slide placed on the stage of a binocular dissecting microscope (about 16 diameters magnification) with its anal segments projecting beyond the paper slip. A finely-drawn capillary pipette, the end of which has been smoothed by flaming, is inserted a short distance up the rectal passage and sufficient blood to fill the stomach is forced up by means of a rubber teat. The pipette is washed out after each injection and then sterilised in boiling water before taking up the blood for the next injection. The skin and hairs surrounding the rectal opening of the louse are treated with a minute drop of 85 per cent. alcohol immediately prior to the insertion of the pipette. Two meals per day are necessary if the insects are to be incubated at 32° C. (90° F.). Lice have been successfully fed by this method for 22 days. Following this technique female specimens of *Pediculus humanus* were given an initial meal of the platelet layer of the centrifuged blood of typhus-infected guinea-pigs, and thereafter fed by injecting whipped human blood. Microscopic examination showed slight infection of the cells of the gut with *Rickettsia prowazeki* as early as the fourth day following the infecting meal, and very heavy infection within 8 to 12 days. The insects were kept for the most part at 32° C., two or more days being passed at room temperature (about 18° C.) in each week. Seven out of nine guinea-pigs inoculated with the emulsified guts or ovaries of platelet-infected lice showed temperature curves of the usual typhus character. One of the guinea-pigs which did not react failed to respond to a subsequent heavy injection of the emulsified brain of an infected guinea-pig; the other showed an abnormal temperature curve, and the question of typhus infection in this guinea-pig therefore remains in doubt. The time occupied in development was only slightly more than half of that required for an equivalent development in lice fed upon typhus-infected monkeys or when whole blood from an infected guinea-pig was injected.

[1] Weigl, 1920, Przeglad Epidemjologiczny, tom. 1, zeszyt 1, p. 15 (summary in English).

THE DUBLIN PHARMACOPŒIAS.

PHARMACOPŒIAS are always interesting works, although the early specimens are far more romantic than the modern, which are strictly scientific and business-like. Attempts were made quite early in medical history to secure the purity of drugs and medical preparations. For instance, in the Kingdom of Sicily, under that enlightened monarch Frederick II. (1194–1250), apothecaries were under oath obliged to compound their preparations "secundum predictam formam." How complicated some of these preparations were may be gathered from a perusal of the poem of Gilles de Corbeille (1140–1224), "De Laudibus et vir tutibus compositorum medicaminum." Even as late as the seventeenth century, and onwards up to 1721, the London Pharmacopœia afforded good reading as to its remarkable compound preparations, and not until 1746, when the fifth London Pharmacopœia appeared, was there a break with the old traditions. The first London Pharmacopœia was published in 1618, and the first Edinburgh one in 1699, but, says Dr. Percy Kirkpatrick in his interesting paper on the Dublin Pharmacopœias now before us, "nothing of the kind had been done in Ireland." In 1719 the Fellows of the Irish College of Physicians came to the conclusion that Ireland should have a pharmacopœia of her own, and Dr. Cuming was asked to prepare a rough draft of the medicines "that he thinks proper for a dispensatory." Nothing seems to have come of this proposal, and when the London Pharmacopœia of 1721 appeared the Irish College of Physicians agreed to recommend to the Dublin apothecaries to use this work until their own was perfected. So matters went on until 1727 when a committee was appointed to "prepare the dispensatory." The committee, however, did not produce any report, and did not even resort to that favourite plan of committees, the appointment of a subcommittee, so the next move was made in Parliament. In 1735 an Act was passed for preventing frauds and abuses in the manufacture, preparation, and selling of drugs; visitors to inspect apothecaries' shops were appointed; a register of apothecaries was made compulsory, every physician or surgeon prescribing drugs had to sign his prescription with name or initials, and was also to express the quantities of the drugs prescribed

" in words at length and not in marks." The Register of Apothecaries never seems to have been kept, although the Act continued in force until 1756. They took things easily in those days, for in 1784 the Irish College appointed a committee to prepare a Pharmacopœia Dublinensis, and by 1791 the book had got so far that it was ordered to be printed; by 1794 a specimen edition of 100 copies appeared, and finally on March 24th, 1806, the first Dublin Pharmacopœia made its appearance. Revised editions followed, and in 1830 the Irish College of Physicians was asked by the London College to join with it and the Edinburgh College in the formation of a general Pharmacopœia for the United Kingdom, an invitation which was refused. The last edition of the Dublin Pharmacopœia was published in 1850 under the editorship of Dr. James Apjohn; it was entirely printed in English. The imperial gallon was substituted for the wine gallon and the avoirdupois pound for the troy pound. The passing of the Medical Act of 1858 led to the abrogation of local pharmacopœias by empowering the General Medical Council to publish a Pharmacopœia for the United Kingdom, and the first British Pharmacopœia appeared in 1864.

INTERNATIONAL MEDICAL HYDROLOGY.

AN International Society of Medical Hydrology was founded at a meeting held at the Royal Society of Medicine on Dec. 9th, with a preliminary membership of 71 medical men, from 13 countries, engaged or interested in medical hydrology. Delegates from France, Italy, and Holland were present. The following were elected representatives for their respective countries:—

1. Belgium: Dr. R. Wybauw, of Spa and Brussels.
2. Czecho-Slovakia: Dr. Isidore Müller, of Carlsbad.
3. France: Dr. Paul Ferreyrolles, of La Bourboule and Paris.
4. Great Britain: Dr. Wilfrid Edgecombe, of Harrogate.
5. Holland: Prof. J. Van Breemen, of Amsterdam.
6. India: Dr. H. D. Dastur, of Baroda State.
7. Italy: Prof. Luigi Devoto, of Milan.
8. Japan: Dr. Goichi Fujiyam (subject to consent).
9. New Zealand: Dr. Arthur Herbert.
10. Norway: Dr. T. W. Knudtzon, of Larvig Bad and Christiania.
11. Switzerland: Dr. de la Harpe, of Lausanne.
12. United States of America: Dr. Guy Hinsdale, of Hot Springs, Virginia.

These will collate and present to the Society, by means of an International Journal, the clinical and experimental work in each country bearing upon the medical action and uses of waters and baths. Dr. C. W. Buckley, of Buxton, and Dr. Ferreyrolles, of La Bourboule, were elected hon. editorial secretaries, and Dr. R. Fortescue Fox president.

THE house and library of the Royal Society of Medicine will be closed from Friday, Dec. 23rd, until Tuesday, Dec. 27th, both days inclusive.

THE last of the South African soldiers who were wounded in the war will shortly be repatriated; and, in view of this, the High Commissioner for the Union of South Africa, at the request of his Government, has addressed to the Army Council an appreciation of the skill, care, and attention accorded to all such soldiers in auxiliary and other hospitals in the United Kingdom during the war. As most of the hospitals have now been closed and their staffs dispersed the Army Council is making public announcement of this appreciation in the hope that it will be brought to the notice of all concerned. In acknowledging the letter of the High Commissioner, the Army Council has taken occasion to convey to the South African Government, through the High Commissioner, an expression of its gratitude for the care and attention bestowed on sick and wounded British troops while in hospital in South Africa.

Public Health Services.

WILLESDEN MUNICIPAL HEALTH SERVICE: MEETING OF RATEPAYERS WITH LOCAL PRACTITIONERS.

THE executive committees of the three Willesden Ratepayers' Associations (Kilburn, Kensal Rise, and West Willesden) met the Willesden doctors, whom they had invited individually, in the St. Andrew's Church Hall, Willesden Green, on Wednesday, Dec. 7th. Over 70 were present. Mr. Blaxland, of the Willesden Ratepayers' Association, occupied the chair.

The Chairman, after explaining that the occasion was the outcome of the proposed meeting with the B.M.A. division, called attention to the great extension of health services contemplated in the forty-fifth annual health report to the Willesden U.D.C. (Appendix M.), which he characterised as unnecessary seeing that the hospitals of London are still, as always, open to Willesden patients. He called upon Dr. G. W. R. Skene to speak to the memorandum[1] issued by the B.M.A., Willesden division, criticising the health policy of the Council.

Dr. Skene, candidate for the Willesden Council at the next election in April, said that doctors were not opposed to public health, but they wanted it carried out properly, with a good return for the money spent. He emphasised the neglect of medical inspection and preventive work generally by a public health staff which tried to do the work of the general practitioner. The health report was itself a condemnation of the whole service. He gave instances of interference by health visitors in the work of general practitioners. A municipal hospital should, he said, be a model hospital; the Willesden hospital should be used for the purpose for which it was intended, which would give the staff a chance to do their work properly; at present they were most unfairly handicapped. He and his colleagues were willing to assist in every possible way with the health work of the district if they were allowed to do so, as well as to consult and advise the health committee of the Council.

Dr. W. Lock, another prospective candidate, said that the health report condemned the service as inefficient and wasteful, and showed it to be a danger to the community. Preventive work should come first and not be impeded by treatment largely carried out by unqualified persons. He hoped the ratepayers would put a stop to the wholesale giving away of things for nothing, a gift which did not tend to improve the race or to strengthen the character.

A ratepayer suggested a petition to the Ministry of Health for a full inquiry.

Dr. H. J. Macevoy said the way to deal with the matter was to return men at the next election who would take the proper steps. The Ministry of Health had made objections already to the expenditure, and no doubt other objections would follow. The Willesden health department failed, he said, to provide proper preventive measures or to deal with epidemics effectively. The general practitioner was the supporting pillar in treatment; he first saw the case, and he knew the people and the house conditions. But instead of being asked to coöperate he was ignored in the report as a person of no consequence. It was difficult for doctors to serve on the Council, but there was no reason why they should not be coöpted on the health committee for purely consultative purposes, when they would willingly give their advice. Treatment at clinics was, he said, unnecessary, as it could be more cheaply and better carried out by private practitioners in the district.

Dr. W. W. Stocker, who was chairman of the health committee 20 years ago when the hospital was built, said that probably a small extension of the hospital was necessary for infectious diseases. School teachers, he said, were against the clinics as interfering with their work. He thought much of

[1] THE LANCET, Nov. 26th, p. 1124.

the work for poor children should be done by the district medical officer of the Guardians; he had been one of these for 20 years.

Mr. Weaver (Kensal Rise Association) said that they had been waiting for years for enlightenment on health methods, and he was glad that they had got it at last. With the help of a sympathetic majority in the Council, an ambitious medical officer of health had gone far beyond his proper sphere. The remedy was in the hands of the ratepayers, who should remove those responsible for the present policy. He hoped doctors would continue to meet and assist them with advice on health matters.

Dr. J. B. Dunning referred to the non-infectious cases in hospital, most of whom could have been treated at home. He thought that no one need suffer even if the hospital was not extended.

Dr. C. F. T. Scott, chairman of the B.M.A. division, proposed a vote of thanks to the chairman. He pointed out that a local advisory council, as suggested in the Dawson report, would go a long way to put health matters on the right lines.

Dr. Skene, in seconding the vote of thanks, informed the meeting that Mr. A. W. Bourne, one of the medical specialists to the Urban Council, had resigned as he did not approve of the Council's policy.

The Chairman, in reply, invited the doctors to appoint three or four of their number to coöperate with the Ratepayers' Associations, the political associations, and other bodies in selecting candidates, in order to avoid overlapping.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

BIRMINGHAM.

Dr. John Robertson, in submitting his report for 1920, says that 1920 was probably the best on record as regards statistics, and that there is every indication that the slow process of spreading knowledge as to how to prevent disease or how to maintain good health is bearing fruit. He considers that the outstanding difficulty in health work at the present time is the inability to provide decent homes for the large number of people who are now sufficiently educated to make proper use of them. Dr. Robertson estimates the population for 1920 at 910,000. The marriage-rate was 16·6, similar to pre-war years. The birth-rate was 27·6, the death-rate 12·6, the infant mortality-rate 83, and the tuberculosis death-rate 1·10. There was great pressure on the hospital accommodation in the matter of isolation wards, and Dr. E. H. R. Harries gives an account of an interesting and successful experiment in "bed isolation" for the purpose of avoiding cross infection, in imitation of the scheme worked out ten years ago by Dr. C. Rundle at one of the Liverpool hospitals. Diphtheria was very prevalent in Birmingham during 1920 and caused 201 deaths; Dr. Robertson is evidently of opinion that antitoxin is not used early enough and also not in sufficiently big doses in severe cases. Both notifications and deaths from pulmonary and non-pulmonary tuberculosis were lower than ever before. The register is carefully kept, and there were at the end of 1920 15,709 names thereon; these are visited by 16 tuberculosis visitors. There were 132 shelters loaned out at the end of the year.

Mr. Brennan De Vine, veterinary superintendent, reports that during the year 21 herds, comprising 596 cows, were being dealt with under the scheme for the eradication of tuberculosis from dairy herds by means of the tuberculin test. The cost of this work during the year was £126, £70 being for tuberculin and the remainder for veterinary fees and expenses. The value of the money spent on child welfare work in Birmingham (£46,586 for 1920) has recently been questioned, and Dr. Robertson in defending the expenditure states that not only has the infant mortality-rate been halved in Birmingham since 1900, but the health of the surviving children has also been "enormously" improved. Birmingham is second only to Bristol among the largest towns in respect of infant mortality-rate. To those who suggest that climate is the cause of the improvement, Dr. Robertson points out that the reduction in mortality from causes other than diarrhœa and enteritis has been almost as great as that in the total infant mortality. The need for the separate cot for the baby is shown by 27 deaths from "overlaying." In all but two cases the parents were said to be respectable and sober persons, but a disproportionate number of the cases occurred on the nights following holidays. The death-rate from this cause is only one-fifth of what it was in 1900–5 and went down with a sudden drop in 1916. Notifications of ophthalmia neonatorum numbered 444; 34 were severe cases, the eyes being permanently damaged in 10 of these, 4 being practically blind in both eyes, while of the remaining 6 had normal vision in one eye.

Birmingham has the same story to tell as other places as regards failure to persevere in treatment for venereal disease. Dr. Robertson gives the figures for two of the hospitals: 1. New cases treated—gonorrhœa, 1327; syphilis, 1077. 2. Ceased to attend before completion of treatment (old and new) gonorrhœa, 602; syphilis, 438. 3. Ceased to attend before final tests—gonorrhœa, 782; syphilis, 720. One in every 11 deaths was due to cancer and the number of deaths from this cause has gone up steadily from 748 in 1911 to 1014 in 1920. The death-rates from bronchitis and pneumonia in Birmingham have fallen and are now nearly as low as the figures for the whole of England and Wales.

BOURNEMOUTH.

Dr. A. D. Edwards reports that Bournemouth has been free from serious epidemics during the year and that the zymotic death-rate has been one of the lowest in the country. The estimated population for 1920 was 85,919. The birth-rate was 16·34, the death-rate 11·10, the infant mortality-rate 45·39, the death-rate from pulmonary tuberculosis 1·02, and from other forms of tuberculosis 0·15. Of the 954 deaths, 127, or about 1 in 7½, were due to cancer and 147 from organic heart disease. The death-rates from these causes are no doubt to some extent swelled by the reputation of Bournemouth as a resort for invalids. The maternity and child welfare work has increased and is aided by voluntary workers. The Boscombe Day Nursery was taken over for a time by the sanitary authority and closed in January, 1921. The sanitary authority use beds at the National Sanatorium, Bournemouth, and other sanatoriums for early cases of pulmonary tuberculosis and beds at the Firs Home, Bournemouth, and the Borough Isolation Hospital for advanced cases. The beds at the Borough Hospital have not been fully utilised. During the year 17 children were sent to the Harpenden Sanatorium, but no provision is made by the sanitary authority for surgical tuberculosis. Dr. Edwards points out that patients after a few months at a sanatorium want to go home and are usually unwilling to go on to a farm colony; nor does he think that consumptives with their families would be willing, as a rule, to move into village settlements if such were available. Sixty-three new cases of syphilis attended the V.D. clinic and 43 patients ceased to attend without completing treatment. The corresponding figures for gonorrhœa were 80 and 52. The figures for milk adulteration are high. Of 157 samples 5 were deficient in milk fat and 12 contained added water, the added water percentage in 3 of the samples being 49·4, 29·7, and 24·4 respectively. Ten out of 31 samples of cream (not sold as preserved cream) contained boric acid and the public analyst comments adversely on this fact.

BRISTOL EYE HOSPITAL.—At a recent meeting of this hospital it was decided to follow the example of the two general hospitals of the city, and to collect payments from both out-patients and in-patients, in the latter case up to £1 1s. per week, as contributions toward the cost of maintenance. Mr. Edmund King, the chairman, said that this scheme was not put forward as a real settlement of the financial difficulties of the hospital, but merely as a temporary and partial relief. He went on to advocate a policy of hospital amalgamation in Bristol as the only alternative to State control. During 1919 and 1920 this policy was discussed at length by representatives of the principal hospitals in the city, but no actual steps were decided upon.

THE WAR EMERGENCY FUND.

A MEETING of this Fund was held at the rooms of the Medical Society of London on Dec. 7th, under the presidency of Sir A. PEARCE GOULD, the Hon. Chairman. Letters of apology for inability to attend the meeting were announced from Sir THOMAS CLIFFORD ALLBUTT, Sir CHARLES BALLANCE, Dr. A. LYNDON, Sir DONALD MACALISTER, Sir ARTHUR MAYO ROBSON, and Sir JOHN LYNN-THOMAS.

The general report of the work of the War Emergency Fund from 1916 to 1921, which was read by Dr. G. NEWTON PITT, the hon. secretary, stated that the War Emergency Fund was inaugurated by the Royal Medical Benevolent Fund in order to help medical men who, by leaving their practices and taking up commissions in the R.A.M.C., found themselves in temporary difficulties which, it was anticipated, would become more general on demobilisation. Applications for help amounting to about £20,000 were received and grants had been made to 134 medical men. In nine cases these had exceeded £300 and in four of them £400, and had been spread over several years. In 27 cases the grants were between £200 and £300, in 51 between £100 and £200, and 47 were for small amounts. The money had been used also, to enable officers to complete the purchase of practices and equipment, to clear off accumulated debts, and to educate children. Many of the cases were those of men broken down in health through the war. At the present moment 47 boys and girls were being educated. In several cases this education would be continued till the age of 16 or later, and some cases were being helped at medical schools and at universities. The main use of the Fund during the next few years would be to carry on educational work and to assist those medical officers who had returned to civil work with health so impaired that they were unable to earn sufficient income.

The treasurer's report of Sir CHARTERS SYMONDS showed that the receipts, including subscriptions from the profession £22,356 3*s.* 6*d.*, donations from National Relief Fund £10,000, together with interest on investment and on deposit account, amounted to £35,619 1*s.* 5*d.* The expenditure in grants was £20,102 3*s.* 1*d.*, with working expenses £1937 13*s.* 1*d.*, amounting to £22,039 16*s.* 2*d.* The sum in hand at the present moment was £13,579 5*s.* 3*d.* The grants, said Sir Charters Symonds, had taken two forms, the one to relieve immediate necessities, and the other to educate children. The latter would involve an expenditure extending over some years and would probably absorb nearly £10,000. If the children were educated up to the end of the sixteenth year he estimated that the Fund would have something like £4000 left for distribution.

Sir A. PEARCE GOULD, in proposing that these reports should be adopted, referred to the great services which had been rendered to the Fund by the late Dr. Samuel West, who had laid its foundations and to whom by his foresight and energy the success of the Fund had been largely due. He thanked the medical and lay press for the material help which they also had rendered. Results had shown both that the Fund was needed and that great need had been met. He hoped that the children who were being looked after by the Fund would have their education extended beyond the sixteenth year.

Dr. HERBERT SPENCER said that the reports were extremely satisfactory, and he agreed that the education of the children should be prolonged.

Sir D'ARCY POWER suggested that in many cases it might be advisable to apprentice the children, as they might not be in a position to take advantage of extended educational courses.

Sir THOMAS BARLOW said that the Fund had accomplished a very important, onerous, and responsible piece of work. He fully sympathised with the idea of extending the educational facilities, but expressed the wish that the treasurer would supply details of how this could be accomplished.

The reports were then adopted.

DENTAL BOARD OF THE UNITED KINGDOM.

THE first session of the Dental Board was opened on Dec. 7th, at 44, Hallam-street, W., the Rt. Hon. FRANCIS DYKE ACLAND, M.P., being in the chair. The names of the members of the Board are given below; all were present with the exception of Mr. J. Sinclair, who was prevented from attending by illness.

Chairman (appointed by the Privy Council): Rt. Hon. Francis Dyke Acland, M.P.

Three members not being registered medical practitioners or registered dentists: Laurence George Brock, C.B., appointed by the Minister of Health; Dugald M'Coig Cowan, M.P., appointed by the Scottish Board of Health; John Sinclair, D.L., appointed by the Lord Lieutenant of Ireland.

Three members appointed by the General Council: Holburt J. Waring, F.R.C.S., member of the Branch Council for England; Sir James Hodsdon, K.B.E., F.R.C.S.Edin., Member of the Branch Council for Scotland; Sir Arthur Chance, F.R.C.S. Irel., member of the Branch Council for Ireland.

Six members who are engaged in the practice of dentistry: Fred Butterfield, appointed by the Privy Council; Horace Archibald Robertshaw, appointed by the Privy Council; William Henry Dolamore, M.R.C.S., L.D.S., appointed by the Minister of Health; William Henry Gilmour, M.D.S., appointed by the Minister of Health; William Guy, F.R.C.S., L.D.S., appointed by the Scottish Board of Health; Edward Leo Sheridan, F.R.C.S., L.D.S., appointed by the Lord Lieutenant of Ireland.

Mr. Norman King was appointed Registrar of the Board.

Chairman's Address.

The CHAIRMAN in his opening address sketched the history of dental administration from its inception in the middle of last century to the passing of the Dentists Act, 1921.

Standing Orders: Appointment of Committees.

The Board then proceeded to consider its Standing Orders, which have been based upon those of the General Medical Council, and to make such alterations in their details as appeared necessary.

The following committees were then appointed:—

Business.—Mr. Brock, Mr. Dolamore.

Discipline.—Mr. Butterfield, Mr. Sheridan, Mr. Gilmour, Mr. Brock, Mr. Robertshaw, Sir J. Hodsdon, Sir A. Chance.

Registration.—Mr. Butterfield, Mr. Sheridan, Mr. Guy, Mr. Gilmour, Mr. Robertshaw, Mr. Waring, Mr. MacCowan.

Education or Examination.—Mr. Guy, Mr. Sheridan, Mr. Gilmour, Sir J. Hodsdon, Mr. Robertshaw.

Students' Registration.—Mr. Sheridan, Mr. Gilmour, Mr. Dolamore, Sir A. Chance, Sir J. Hodsdon.

Finance.—Mr. Brock, Sir J. Hodsdon, Sir A. Chance, Mr. Dolamore, Mr. Waring.

One of the early functions of the Finance Committee will be the consideration of a site for the Board's future offices.

Appointment of Treasurer and Trustees.

The following were also appointed:—

Treasurers.—Mr. Waring, Mr. Dolamore.

Trustees.—Mr. Waring and the present trustees of the General Fund.

The Board considered that three trustees might prove a better number than two, in view of the possibility of two trustees dying at the same time.

The above appointments having been made, the Board proceeded to frame regulations and to consider the other subjects on the agenda paper in camera.

THE EAST FORTUNE SANATORIUM.—At a meeting of Hawick Town Council a report was submitted of the probable expenditure to be incurred in connexion with the East Fortune Sanatorium. The buildings were found to be in good condition and to require little alteration. The most costly improvement necessary was the installation of a central heating system to conform with the Board of Health regulations. As the buildings stretch for about half a mile this involves heavy expenditure. In order to obtain the Government grant of £180 per bed, the plans must be prepared and submitted to the Board of Health before the end of March.

AN EAST ANGLIAN HEART CLINIC.

THERE can be little doubt that the war caused a considerable increase in disorders of the heart, both functional and organic, amongst men who have served in the army. To deal with a large number of these cases occurring in the Eastern region, the Ministry of Pensions has recently established a series of cardiovascular clinics, with a central hospital at Norwich, in the district embracing the counties of Norfolk, Essex, Suffolk, Cambridge, Bedford, Herts, Oxford, Bucks, and Berks.

In each area a heart specialist has been appointed, who sits on the special heart boards, and has charge of the local heart clinic to which patients are sent for diagnosis and advice as to treatment. This treatment is carried out by the panel practitioners, acting under the advice and with the coöperation of the heart specialist. Dr. Hubert J. Starling of Norwich, has been appointed consulting cardiologist for the Eastern region. He has charge of the cardiovascular clinic and hospital in Norwich, with supervision of all the cardiovascular work in the other areas of this region. For the purpose of the clinic and hospital, a large house in Thorpe-road, Norwich, a private residence before the war, and formerly used as a limb-fitting centre, was adapted by the Ministry of Pensions in June, 1921. There is accommodation here for 25 in-patients, whose average stay in the institution is six weeks. The cases are sent here from all the areas in the region, either for diagnosis of obscure conditions, or for grading by means of their response to exertion, as ascertained by a graduated series of exercises. By means of these exercises some are rendered fit to resume their pre-war employment, those who are not so fitted are recommended for suitable training in other employments, or if they require treatment for a definite cardiac disability, they are sent for 12 months to a treatment and training centre under the Ministry of Pensions. On the grounds of economy there is no resident medical officer; but in addition to the consulting cardiologist, who visits the hospital daily, the staff consists of an assistant medical officer, Dr. Branford Morgan. There are also a matron, a nursing sister, and a remedial instructor, who is responsible for the carrying out of the remedial exercises. These exercises are arranged in three grades:—

The first grade is designed with a view to restoring normal physiological movements, such as those of the limbs, trunk, and head, with especial attention to thoracic breathing. The D.A.H. case of some standing almost invariably breathes with the diaphragm and abdomen, the upper part of the chest becoming more and more flattened and inert, while the lower half of the abdomen becomes protuberant. So unused are these patients to deep thoracic breathing that a condition of apnœa and giddiness often results, after early efforts to regain it. This grade lasts 20 minutes.

The second grade is somewhat more strenuous than the first and involves actual effort, the deep breathing exercises being continued. The period of this exercise is 30 minutes.

The third grade is the most strenuous and includes hopping, lunging with arms and legs, quick march and doubling, and two games. The value of games is very high. Many patients, on account of the mental reaction associated with exercise in a definite form, show much reaction after ordinary drill. The same men can play vigorous games, such as ball-throwing, bumble puppy, and football, with little if any sign of distress.

The following three cases, observed at a recent visit to the clinic, may be taken as illustrative of the work done:—

1. A man, aged 30, who had served in France. Complains of shortness of breath and a little precordial pain. No history of rheumatic fever. He is found to have early mitral stenosis. There is a presystolic murmur at the apex, hardly perceptible when the patient is examined in the erect posture, but very distinct when lying on his left side. This case is able to do the hardest form of exercise with comparatively slight reaction.

2. A man, aged 28, with shortness of breath and a good deal of precordial pain. A diastolic murmur is heard, best at the third left costal cartilage, in full expiration. There is also a presystolic murmur at the apex. The case is an early one, and there is no suggestion of a Corrigan pulse. His exercise tolerance is very fair, exemplifying the usual rule that cases of early organic disease have less of the effort syndrome than those with functional disorders.

3. A case of paroxysmal tachycardia in a young man of 25 attending the clinic. The same condition had been observed in this case in 1917, and has not altered since. The cardiac rhythm is that of a regular series of irregular beats. There are two normal beats, followed by two to four very rapid beats and then two more normal beats, and so on. Except for some dyspnœa on exertion, and only a moderate exercise tolerance, the pensioner has very little complaint. Another very similar case, an in-patient, shows on the polygraph two to four normal beats, followed by six to eight quick beats of tachycardia, in a regular alternating sequence. This irregularity has been known to exist since early in 1918. This pensioner is able to do the highest grade of exercise, and has been at work as a stock-man since his discharge. He is not able to lift heavy weights or run for any distance.

The cardiovascular clinic is held once a week, on Thursday mornings. Cases are sent here from the Norfolk and neighbouring areas for diagnosis, assessment according to grade, and treatment.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

Responsibility of Doctors in Cases of Abortion.

AN illustration of professional difficulty arising in a case of abortion was lately afforded in the coroner's court at Debreczen, Hungary. A medical man was called to attend a woman who, a day or two afterwards, confessed she had taken a large dose of aloes and had procured abortion. He did not tell the husband of the state of affairs for 10 days, nor did he inform the parents to whose house the patient was then removed. Lastly, he did not inform the gynæcologist of the hospital, to which she was finally taken (and where she died) of the cause of her condition, although he stated that she was suffering from peritonitis. He excused himself to the coroner on the grounds that the matter was one of professional confidence, and that he did not regard the woman's condition as serious enough to warrant the taking of depositions. It is remarked in the medical journals that public opinion would doubtless commend the physician for his reticence in so far as the relatives were concerned, but that there was no reason why information, even of this delicate kind, should not have been given to the hospital doctor under whose care the patient subsequently came. Such an act could never be construed as a breach of confidence. Nevertheless, one medical writer held that it was preferable that medical practitioners should err on the side of discretion. But by remaining the sole depository of such a secret the practitioner may incur the risk of passing for an accomplice, besides making himself an accessory after the fact.

Small-pox in Albania.

An epidemic of small-pox has broken out in some parts of Albania; the medical authorities have communicated the facts to the Albanian, Jugo-Slavian, Roumanian, and Italian medical and lay papers, and measures are being taken to prevent the disease spreading. The municipalities have appointed special medical men to perform gratuitous vaccination, and the population is asked not to put any difficulties in their way. It is likely, however, that the vaccinators will be hampered in their work, especially in some quarters where the working classes look with suspicion upon every free measure of the sanitary authorities.

The Threat of Cholera from Russia.

The news of the outbreak of cholera in Russia is causing much anxiety here and in neighbouring states. It is feared that it will be impossible to prevent the scourge from spreading into Bessarabia. A day or two ago a suspicious case occurred at Kisenew; a man was taken suddenly ill and showed a number of symptoms characteristic of cholera, such as violent vomiting, diarrhœa, cyanosis, and collapse. The man died, and the news soon spread through the city that cholera had again appeared. I am informed,

however, on good authority that this case was not cholera. Active precautions are everywhere being taken, and sanitary and municipal authorities are displaying a laudable vigilance. Matters are different in the interior of Russia. From the districts about Moscow have come reports concerning the epidemic—reports of 300 to 500 deaths per day in one province alone, of hospitals full of cholera patients, and of chemists' shops devoid of the most indispensable drugs. Moreover, the population is in a condition of semi-starvation, food being so scarce that families can afford only one meal a day. Infants are dying for lack of milk, and pregnant women are completely unable to feed themselves properly. The medical staff of the hospitals is very deficient in strength and inferior in quality; the former doctors have been expelled as counter-revolutionaries and their successors are graduates of recent qualification at universities where the chief subjects are "socialism and communism," anatomy and physiology being of second importance. Prof. Pavlov, the world-famed physiologist of the University of Petrograd, has been expelled from the University, and is said to be nearly starving. In such conditions it is not to be wondered at that cholera claims thousands of victims; other infectious diseases are also flourishing, threatening the sanitary condition of the whole of Europe.

Nov. 22nd.

SWITZERLAND.

(FROM OUR OWN CORRESPONDENT.)

Reform of the Medical Curriculum.

THE reform of the medical curriculum has been for some time the subject of discussion, and a commission chosen by the Federal Department for the Interior is still deliberating on this question. One of the chief problems under consideration is the standard of the entrance examination. So far Latin has been compulsory for the "Maturität" (or "Maturité") examination, and Greek optional, being interchangeable with a modern language—preferably English. The majority of our medical men have had a classical training, and there is now a movement tending to replace the classics by a thorough course in the natural sciences. The Executive of the Medical Association thought it wise to test the opinion of the profession on this question, and a questionnaire was sent out with the following results:—Is it advisable to require the same "Maturité" for the medical and technical profesions?—85 Yes, 1542 No. Do you think that the study of Latin is necessary for the prospective medical man?—1583 Yes, 69 No. Is it advisable to make Greek compulsory again?—963 Yes, 651 No. Do you consider a "Maturité" requiring natural sciences, the mother language, and mathematics, sufficient for the prospective medical man?—50 Yes, 1591 No. These figures are interesting, since they show clearly that the great majority of the profession in Switzerland sticks to the ideal of a classical training. Perhaps a few years ago the vote would have been different. To-day it is realised more clearly that the profession can only retain respect when the members have a wide and comprehensive education, and that a purely technical training does not suffice to make a good doctor.

Cocaine.

A sad chapter is the cocaine mania which seems to be in full swing in some of our towns. The cause may be chiefly economic, since most of the cocaine is imported from Germany at very moderate prices owing to the high Swiss exchange. The price paid for one kilo is said to be varying between 700 and 1000 francs, and those who traffic in the drug sell it to their clients for 5 to 20 francs a gramme. Usually it is sold adulterated with boric acid, sugar, and similar compounds. Unfortunately we have no adequate legal means of dealing with this abuse. At the annual meeting of the Société Suisse de Psychiatrie on Nov. 27th a resolution was passed urging the Federal Council to take immediate and energetic steps to stamp out the contraband and illicit traffic of cocaine and to enforce a law under which cocaine maniacs, each of whom is a source of contamination to his environment, can be speedily interned.

Felix Lewandowsky and Albrecht Burckhardt.

The Faculty of Medicine of Basle mourns the loss of two distinguished members. Dr. Felix Lewandowsky, professor of dermatology and director of the Clinic for Skin Diseases, has died at the early age of 43. Prof. Lewandowsky, who came originally from Hamburg, underwent training at the dermatological clinic of Berne under Prof. Jadassohn. His studies on tuberculosis of the skin, which he embodied in a brilliant monograph, brought him into prominence. As a lecturer he was distinguished by clear and precise exposition and vivid diction.

Dr. Albrecht Burckhardt, professor of hygiene for 30 years, was a relative of J. L. Burckhardt, the famous orientalist. He was a fine example of the old school of culture and a true son of his native city of Basle, to which he devoted all his energies. In 1909 he published what may be called his life work: Demography and Epidemiology of the City of Basle from 1601 to 1900. Few continental towns offered better possibilities for such a study. Most Swiss towns, with their large stable populations, have well-kept archives. At Basle, which has had a university since 1460, there exist also records and notes on the state of health and current epidemics by reliable physicians. Burckhardt, who had a strong bias towards historical research, made the best use of all these opportunities, and produced a work which is in some ways unique. He was also the author of a biography of Paracelsus. Dr. Burckhardt was a well-known figure in Basle, and his death is a loss to the whole community.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Notification of Infectious Diseases and Statistics.

AT a recent meeting of the Société de Médecine Publique et de Génie Sanitaire Dr. P. Paquet, chief medical officer of health for the département de l'Oise discussed the results obtained in this county in the course of the last ten years. During this period medical practitioners have notified 19,771 cases of infectious diseases, the population consisting of 387,760 inhabitants. The cases of typhoid fever numbered 1207; though the total yearly number of infectious diseases notified has not varied much, cases of typhoid fever appear to have greatly decreased since 1914; in 1911 there were 271 cases, and in 1920 only 52. Dr. Paquet pointed out that most cases occurred amongst the people living in the valleys, where the water in the wells is rather shallow; in districts where the depth of the water in the wells is 20 metres or more typhoid fever is only exceptionally recorded. It is interesting to note that the progressive diminution of the yearly number of cases of typhoid fever in the département de l'Oise continued to take place during the war, though a great many troops were concentrated in its area and in spite of the fact that refugees crossed the county in great numbers on several occasions. According to Dr. Paquet, this is due to the fact that inoculation against typhoid fever has been practised on a large scale amongst the civilian population of the county; he also points out how the water-supplies have been constantly improved during the last ten years, and mentions the educational influence of the medical officers. During the same period 2041 cases of diphtheria have been notified. The number recorded annually remained approximately the same until 1915, since when there has been a progressive increase. Dr. Paquet pointed out that these unsatisfactory statistics are not peculiar to the département de l'Oise; similar facts have been recorded throughout France. It has been found in the département de l'Oise that the disease is more

prevalent in low and damp localities, where it is endemic and where it occasionally breaks out into local epidemics. It has also been recorded that, proportionally to the population, diphtheria is more frequent in villages than in towns. In districts where diphtheria is endemic the forms of the disease are always mild even in the occurrence of a local epidemic; the contrary has been observed in regions where diphtheria occurs only occasionally. Between 1911 and 1920 cases of tuberculosis brought to the notice of the medical officers of health of the county numbered 3069. According to these figures the proportion of cases is 8 per 1000 inhabitants. It appears though that the number of cases of tuberculosis is greater than one would expect from the notification figures, since the annual number of deaths due to the disease is approximately 900. According to statistics, tuberculosis is just as prevalent in the country as it is in industrial centres; in 11 towns of 5000 inhabitants and over for which the total population amounts to 92,610 inhabitants, 825 cases have been recorded—that is, 8·90 per 1000; in 49 boroughs of 1000 to 5000 inhabitants and for which the total population is 85,841 inhabitants, the number of cases of tuberculosis is stated to be 766—that is, 8·09 per 1000; in 402 villages of less than 1000 inhabitants 1372 cases of tuberculosis have been detected, the proportion being calculated as 8·54 per 1000. Dealing with these statistics Dr. Paquet emphasised the fact that they were absolutely opposed to the general belief that tuberculosis is more frequent in towns than it is in the country. He thinks that the findings are sufficiently explained by the spread of alcoholism to the rural districts; by work done at home under most unhealthy conditions, such as the making of brushes, and the assembling of parts of boots; and by the return of contaminated workmen to their country homes, where they spread the disease.

Prizes at the Académie des Sciences,

The Members of the Académie des Sciences have awarded various prizes as follows: Prix Bréant (Fr. 5000) to MM. E. Dujardin-Beaumetz and E. Joltrain, bacteriologists to the Pasteur Institute, for their book "History of an Epidemic of Plague in Paris." Fonds Charles Bouchard (Fr. 5000), presented to Mr. M. Ménard, radiologist to the Cochin Hospital (Paris), for his works on radiography. Prix Montyon (Medicine and Surgery), comprising various prizes—three of Fr. 2500, three of Fr. 1500, and one of Fr. 1000, respectively—to Mr. E. Roubaud, pathologist to the Pasteur Institute, for his works on malaria in France; to MM. A. Sieur, médecin inspecteur général de l'Armée, and R. Mercier, professor at the Medical School of Tours, for a series of records, "Le Service de Santé du Groupe d'Armée Fayolle en 1911"; to Mr. E. Bourdelle, professor of anatomy in the Veterinary College (Alfort), for a text-book on Regional Anatomy of Domestic Animals; to Mr. E. Antoine, interne des Hôpitaux de Paris, for his work on Severe Forms of Proctitis and Colitis; to Mr. M. Rubinstein for a text-book on Serology and Sero-diagnosis; to Mr. A. Vernes for his work "Atlas de Syphilimétrie" [1]: to Miss A. Forget, directrice de l'Œuvre, for her book on Re-education of Speech. The Prix Montyon (Physiology) (Fr. 700) was awarded to Mr. H. Piéron, director of the laboratory of psychophysiology of the Sorbonne, for his study of reflexes and muscular tone; Prix Barbier (Fr. 2000) to Mr. E. Saquépée, professor at the Val-de-Grâce Hospital, for his work on gas gangrene; Prix Lallemand (Fr. 1800), granted to MM. G. Guillain, professeur agrégé of the Faculté de Médecine de Paris, and A. Barré, professor of the Faculté de Strasbourg, for their work "Travaux Neurologiques de Guerre"; Prix Argut (Fr. 1200) to Mr. F. de Courmelles, for his works on X rays and radium in gynæcology; Prix Godard (Fr. 1000) to MM. A. Chalier, chief of the surgical clinic of the Faculté de Médecine de Lyon, and X. Delore, surgeon of the hospitals at Lyon, for their work on tuberculosis of the genital organs; Prix Philipeaux (Fr. 900) to Mr. E. Grynfeltt, professeur agrégé of the Faculté de Médecine de Montpellier, for his work on the histology and the embryology of the eye of the vertebrates; Prix du Baron Larrey (Fr. 700) to Mr. G. Ferry, assistant at the surgical clinic of the University of Strasbourg, for his works entitled "Aviators' Disease" and "Fitness for Air Service."

Dec. 8th.

[1] See Review, THE LANCET, July 23rd, p. 183.

MEDICAL AND PHARMACY BILL FOR SOUTH AFRICA.

AMONG the important measures to be introduced by the South African Government when the Union Parliament meets on Jan. 20th is a Bill "to consolidate and amend the laws in force in the Union relating to medical practitioners, dentists, pharmacists, midwives, trained nurses, and other classes of persons; the keeping and sale of poisons; the importation, sale, and use of habit-forming drugs; and as to other matters connected therewith or relating thereto." The Bill is the outcome, and practically a re-draft, of a similar measure considered originally by a Select Committee in 1917; its provisions are based upon the information then elicited, together with reports since obtained from the various medical councils and pharmacy boards. The chief provisions of the Bill are:—

1. Abolition of the existing four provincial medical councils and four pharmacy boards, and the constitution of a new South African Medical Council and a new South African Pharmacy Board, with extended powers.
2. Registration of medical and dental students studying at any South African university at which a medical and dental faculty is or may become established.
3. Alteration in registration fees.
4. Replacement of the term "chemist and druggist" by "pharmacist."
5. Provision against medical practitioners keeping an open chemist's shop.
6. Provision for the carrying on of a pharmacy by a limited liability company or other plurality of persons.
7. Certain protections for native medicine men.
8. Additions to the poisons laws, including more stringent regulations and limitation of storekeepers' sales.
9. Institution of a poison section.
10. Chapter dealing with opium and habit-forming drugs.

The new Medical Council is to be appointed for five years, and is to consist of 14 medical practitioners and four dentists, some of whom are to be nominated by the Government and the rest by the practitioners. The new Pharmacy Board is also to hold office for five years, and is to comprise eight pharmacists and one medical practitioner, an official of the Public Health Department. Certificated midwives and trained nurses, &c., will be granted permission to elect a registered person to the Council. Provision is also made for nominees to the Council and Board from any university which has established a faculty of medicine, and from any school of pharmacy approved by the Board. The names of all persons at present registered in any of the four provinces will be embodied in the new Register, with the exception of persons whose addresses are outside the Union or are recorded as unknown. The new Register will comprise medical practitioners, dentists, pharmacists, certificated midwives, trained nurses, medical and dental students. The Register will abolish the existing anomaly that, although the Union has been in existence for over 11 years, it is not permissible to-day for a person registered in one province only to practise in any of the other three provinces. No foreign diplomas are to be recognised unless reciprocity exists between the Union and the country issuing such diploma. The new registration fees will be: medical practitioners, £25; dentists, £25; pharmacists, £12 10*s.*; midwives and trained nurses, £2 10*s.*; additional degrees or diplomas, £1.

THE WOOD-HILL FUND.

THE following subscriptions and promises have been received to the fund for reimbursing Dr. H. Wood-Hill in the very heavy expenses incurred by him in the case Clayden *v.* Wood-Hill, in addition to those recorded in the list published in our issue of Dec. 3rd (p. 1187). There is ample need for further support.

	£	s.	d.
Amount previously acknowledged	196	19	0
Kent Branch of the British Medical Association (per Dr. Edwin Starling, Tunbridge Wells)	27	16	0
Mr. G. Grey Turner, Newcastle-upon-Tyne; Mr. H. A. T. Fairbank, London; Mr. E. H. Bruce Fox, Yealmpton; Mr. William Wyllys, Great Yarmouth; Sir Hugh M. Rigby, K.C.V.O., London; Mr. Herbert C. Crouch, Ascot .. .. each	10	0	0
"M," London; Mr. Hugh Whitwell, Norwich; Mr. Herbert M. Sylvester, Leiston; Mr. Naughton Dunn, Birmingham; Mr. Charles J. Acton, Wangford; Mr. H. G. K. Young, Braintree; Medical Committee of Durham County Hospital (per Dr. Selby W. Plummer); Dr. Arthur Burton, Cromer; Dr. James Taylor, Oulton Broad .. .. each	5	5	0
Dr. Branford Morgan, Norwich; Mr. C. W. Dean and Dr. F. W. Bury, Lancaster .. .. each	4	4	0
Dr. Arthur Crook, Norwich; Dr. P. L. Giuseppi, Felixstowe; Dr. W. T. Rowe, M.C., Nottingham; Mr. N. Blake Odgers, Northampton; Mr. Hunter F. Tod, London; The Wrekin Medical Club (per Dr. George Mackie, Wellington) .. .. each	3	3	0
Mr. John Shepheard, North Walsham; Dr. C. S. Pantin, Douglas; Dr. John Uthoff, Bournemouth; Mr. Guy B. Nicholson, Hull; Dr. E. J. C. Dicks, M.B.E., Framlingham; Mr. H. N. Baron, Orford; Dr. O. C. Gaynor, Wymondham; Mr. Charles F. Gross, Wickham Market; Mr. Vincent P. Tighe, Dublin; Mr. Mark R. Taylor, Norwich; Mr. Henry Wyllys, Great Yarmouth; Dr. Dora Colebrook, Cambridge; Mr. C. H. Andrews, Norwich; Mr. W. E. Wyllys, Belton; Dr. W. F. Addey, Ipswich; Dr. John Attlee, London; Mr. Francis Barwell, Mildenhall; Mr. E. P. Hughes Dudley, Caxton; Dr. Herbert Cook, C.B.E., Cardiff; Mr. C. P. Crouch, Weston-super-Mare; Dr. A. J. Campbell, Duns; Dr. Cyril E. Harrison, North Elmham; Mr. Edward V. Perry, O.B.E., Reepham; Mr. F. A. Martin Flegg, South Woodford; Dr. H. Mallins, Watton; Dr. Batterbury and Partners, Wimborne; Dr. J. S. Hinnell, O.B.E., Bury St. Edmunds; Dr. H. M. Hart-Smith, Southwold; Mr. A. M. Vann, Durham; Dr. Louis Macpherson, Edinburgh .. .. .. each	2	2	0
Mr. J. E. Chalmers, Castleton	2	0	0
Dr. Ian M. Jefferies, London; Mr. Reginald Cock, London; Dr. P. R. Bolus, Upper Norwood; Dr. G. MacLellan Blair, London; Dr. Enid Calder, Lowestoft; Dr. Darley Wynne, St. Faiths; Dr. C. A. O. Owens, Long Stratton; Dr. George Master, Bury St. Edmunds; Dr. Bernard Batt, Bury St. Edmunds; Mr. E. H. Worth, Streatham; Dr. W. W. Floyer, Egham; Dr. W. Black Jones, Builth Wells; Dr. J. C. Jones, Pensilva; Mr. M. C. Moxham, Aldborough; Dr. A. G. Hamilton, Chester; Dr. J. Delpratt Harris, Exeter; Mr. G. H. Hunter, Haughley; Mr. Alfred E. Sears, Blackheath; Dr. Thomas C. Blackwell, Oxshott; Dr. A. M. Watts, Broadstairs; Dr. William J. Ashby, Aylesbury; Mr. A. E. Ironside, M.C., Ashtead; Mr. William F. Haslam, Birmingham; Dr. J. S. Manson, Warrington; Dr. Charles J. Girling, Salisbury; Dr. Dudley G. Greenfield, Rushden; Dr. H. Laird Pearson, Birkenhead; Mr. Philip Talbot, Stalybridge; Mr. H. B. Walker, M.C., Minehead; Mr. R. Loy Wilcox, Hemel Hempstead; Dr. Frank W. Melvin, M.B.E., Oswestry; Dr. Joseph Walker, Bootle; Dr. W. J. Dewar, Arbroath; Dr. Francis C. Bottomley, O.B.E., Bournemouth; Dr. J. Alford Andrews, Bovey Tracey; Dr. C. H. Attenborough, Frimley; Dr. John Fletcher, Fulham; Dr. Wortley Quait, Mundesley; Dr. George Black, Tomintoul; Mr. T. Walsh Tetley, Kirby Moorside; Dr. Alfred Cox, O.B.E., London .. .. .. each	1	1	0
Mr. T. A. Murray, Penketh; M. E. M. C., Kensington; Dr. R. E. Paterson, Methlick .. .. each	1	0	0
Dr. R. W. Rix, Sudbury	0	10	6

EPSOMIAN CLUB: ANNUAL DINNER.—Dr. H. E. Haynes presided at the annual dinner of the Club, held at the Trocadero Restaurant on Dec. 8th, when there was a full attendance of old Epsomians, largely medical, a few clerical, with representatives of other professions. Sir Ernest Pollock, Sir D'Arcy Power, and Sir J. Purves Stewart were among the invited guests. "Floreat Epsomia" was sung with enthusiasm after the headmaster, Rev. W. J. Barton, had chronicled the last year's school activities. Dr. H. F. Ealand, of Farnham, wittily proposed the guests and Sir D'Arcy Power voiced the warm feelings of those present towards the chairman for his many services to the Royal Medical Foundation.

Correspondence.

"Audi alteram partem."

CLINICAL UNITS.

To the Editor of THE LANCET.

SIR,—It has been a great satisfaction to me to find that my reflections[1] on this new development of medical education in England have been well, even cordially, received; but no doubt, as time goes on, certain just criticisms will appear. Meanwhile my notions may be on right lines, in the main. One criticism, which has appeared more than once, is that, in urging that the direct function of the director of the unit will be less the teaching of the undergraduate and more the study of disease in association with senior and graduate students, I had forgotten the counsels of Huxley and Foster that it is particularly the function of the professor to teach the beginner so that in the first instance he may get his head put straight. May I suggest that in my article I indicated—indirectly perhaps—that the conditions of comparison in this case were not the same. I said plainly that the director of the unit was but one of the teaching staff; that on the honorary staff of a large hospital there were other physicians and surgeons of even greater experience and sagacity who were at least as well fitted to teach the undergraduate; in a sense perhaps more so. The director I proposed was to be a comparatively young man, on his election, who would devote himself rather to research than to the pragmatics of practice, which in this stage of his education are, rightly enough, more prized by the undergraduate and his father.

I am, Sir, yours faithfully,

Cambridge, Dec. 9th, 1921. CLIFFORD ALLBUTT.

THE ORGANISATION OF MEDICAL EDUCATION.

To the Editor of THE LANCET.

> "It may be that professional preparation will divide into two courses—into a five-years' course on craft lines for the diploma of the colleges, and a university course for those who have the turn and the time for wider and deeper study; a difference which is perhaps coming about, more or less, undesignedly. In any case the universities must not trifle with their standards."—Sir CLIFFORD ALLBUTT, THE LANCET, Nov. 5th, 1921.

> "Is it not wasteful, archaic, not to say stupid, to insist that each and every student shall pursue precisely the same subjects, presented in the same way?"—Prof. MADISON TAYLOR, *American Medicine*, August, 1921.

SIR,—The innumerable suggestions which, within the last few years, have been made with a view to reorganisation of medical education, leave little doubt as to the existence of widespread dissatisfaction with the present state of affairs. In every civilised country efforts have recently been made to counteract the growing complexity of the medical curriculum by the elimination or curtailment of the least important educational subjects. In theory this process may seem comparatively simple; in practice it is reminiscent of an anecdote related by Sir Clifford Allbutt. He sat on a committee to simplify the British Pharmacopœia by the ejection of the least valuable of its contents. But which were they? Whenever one member of the committee proposed the ejection of a certain drug, another member would insist that this particular drug had been his chief aid and stay. So the British Pharmacopœia emerged from this ordeal as bulky as ever. As long as the problem is solely in the hands of professors and specialists, there is little chance of a radical change for the better in medical education, for the same pitfalls await the reformer as those which Sir Clifford Allbutt

[1] THE LANCET, Nov. 5th, 1921, p. 937.

has described. When the time has come for the deliberations of professors and specialists to be leavened by the common-sense views of the general practitioner, the recently qualified, and even the unqualified student, the chances of reforms being both mooted and carried will be increased.

Let us take the attitude of the general practitioner who, after many years of practice, indulges in a retrospect of his training and tries to form an estimate of its value as judged by its influence on his career. He may perhaps find that in his practice about 50 per cent. of his patients suffered only from functional disturbances, that his success or failure in these cases depended on the degree of psychological skill he was blessed with, and that psychology was a subject totally ignored by his teachers throughout his career as a student. In many other matters his retrospect may leave him with a no more respectful opinion of professors than that with which Bismarck was credited. It is a thousand pities that the general practitioner, who knows better than any other class exactly where the shoe pinches, should be so voiceless in the task of bettering matters for the coming generations of medical students. It is well to remember that only a small fraction, say 5 per cent., of medical men become teachers and specialists. Yet this small minority has hitherto enjoyed a monopoly in the control of medical education, and has imposed its will on an unconsulted majority. This minority of nimble-witted examinees knows little of the struggles of the less gifted majority, who flounder through their examinations with much toil and many a reverse. Having passed their examinations with ease and distinction, it is almost inevitable that the prize-snatching minority should feel satisfied that all is well with the medical curriculum, and that they should be tempted to add to its complexity rather than to simplify it. Again, anyone who breathes the air of the students' quarter in hospitals knows how discontent seethes with regard to certain subjects in the medical curriculum. Why should not there be an outlet for this discontent, some of which may be justified? The question is surely pertinent.

The older generations do, no doubt, enjoy a judgment and perspective denied to callow youth, but the student possesses first-hand knowledge and is often more vitally interested in the matter than elderly teachers. Not only does the student often have a shrewd conception of the comparative value of the different subjects he is expected to master, but he also knows much better than his seniors which of his teachers are efficient and which are more or less incompetent. Yet he is allowed little or no choice, and many a misspent hour is the outcome of regulations enforcing attendance at the lectures of a dull and droning "teacher." Some years ago, at a Continental university, a professor of surgery became so notoriously incompetent as a teacher and unfair as an examiner that a deputation of medical students waited on the university authorities, insisting on his early retirement. This took place shortly afterwards. But for every such instance of vindication of the rights of the student, there must be dozens in which the forces of reaction and inertia have prevailed. It is so easy for these forces to invoke the privileges of age and experience.

Thoughts like these were, perhaps, passing through the mind of Prof. J. Madison Taylor when he sat down to compose his thesis[1] on "A New Conception of Medical Education and Medical Practice." With personal experience of general practice, he has brought to his present position as Professor of Physical Therapeutics and Dietetics in Philadelphia an outlook not exclusively academic. The principle of his scheme is the sorting out of medical students for different spheres of usefulness early in their career. He regards as wasteful the old system of passing every student through the same tests, irrespective of his individual abilities, and he visualises a future with three different grades of medical practitioner. The first and lowest grade he quaintly describes as the "drug store type." This "type" is meant to cope with walking cases, to deal practically with minor surgical and medical emergencies, to have experience in dispensary work, and to be qualified to practise after two years of "part-time studies." The second grade or "panel" type is to be qualified for more serious emergencies, to visit homes, to care for the average patient, and when "the problems exceed his training," to call in consultants. The period of training required for this grade of practitioner to become competent and "up to all ordinary practice," is to be three years. For the third and highest grade, a four years' course is suggested, part of the fourth year being devoted to such specialities as obstetrics and major operations. Although the humble-minded student, conscious of his inability to become a shining light in the medical profession, would be able to complete his studies in two years and then begin earning his living, opportunities to rise from one grade to the other would not be lacking, and he might ultimately reach the third or highest grade.

Another suggestion put forward by Prof. Madison Taylor is that there should be preliminary tests of the student's intelligence, gumption, or common-sense. "For the higher class medical adviser greater emphasis should be laid on the more abstract processes of intellectation." This paper conveys a bizarre impression. The conception of a cross between an orderly and a mediæval barber-surgeon—the product of two years' training—is somewhat startling; and, judged by European standards, the notion that a consultant surgeon or physician can be evolved in four years seems a whimsical fantasy. But these considerations should not blind us to the essence of Prof. Madison Taylor's scheme, and if we make due allowances for the very different conditions of medical practice obtaining in the U.S.A., and remember that what may seem startling and unconventional to us may be the acme of common-sense beyond the Atlantic, we may come to the conclusion that the principle for which Prof. Madison Taylor is fighting is sound. Until we are satisfied that our educational system is made sufficiently flexible to meet the needs and qualifications of the individual, and till it is modelled on the requirements of the student in his post-graduate career, it is our obvious duty to provide ventilation for grievances and to leave the door open to reforms.

I am, Sir, yours faithfully,

Dec. 10th, 1921. C. L.

[1] American Medicine, August, 1921.

SELF-DISINFECTION.

To the Editor of THE LANCET.

SIR,—May I be allowed a word of comment on the annotation in your issue of Dec. 10th dealing with the articles contributed by Sir Archdall Reid and myself to the *International Journal of Public Health*? On receiving the invitation to write the article in question, I suggested to the editor that the controversy on "self-disinfection" was essentially a "domestic" one, and that it was undesirable to parade it in an international journal circulating in other countries in which this question is rightly regarded as of minor importance in the campaign against venereal disease. I added that, if the subject was to be broached at all, it would be better to have a single article, written by someone not specially identified with either side, and free from polemics. I received the reply, however, that Sir Archdall Reid had already accepted the invitation to contribute a paper, and that the *Journal* was thereby committed to its publication. Rather than to allow judgment by default, I agreed, though against my inclination, to write the short article to which you have alluded.

The National Council fully realises the harm done to the anti-venereal campaign by public controversy on "self-disinfection," and has always refrained from initiating such controversy either in the medical or the lay press. The most that can be urged against it is that occasionally it has ventured to defend itself

when attacked, lest a wrong impression should arise that arguments left unanswered are unanswerable.

I am, Sir, yours faithfully,

London, W., Dec. 10th, 1921. OTTO MAY.

ZINC IONISATION IN OTITIS MEDIA.

To the Editor of THE LANCET.

SIR,—In an annotation on Chronic Aural Suppuration in THE LANCET of Nov. 19th you remark, "It is generally agreed that the large majority of cases of suppurative otitis recover completely if treated from the onset." It has been my experience that a large proportion of these cases recovers completely when the surgeon carries out the treatment himself, or when the cases are taken into hospital and treated there as in-patients; that a smaller proportion recovers when the cases are seen as out-patients, say, once or twice a week, treatment being meantime carried out at home; and that, of course, a still smaller proportion recovers when untreated.

Now, the large majority of acute ear cases falls into the category of those seen occasionally by the surgeon and treated at home with, on the whole, not very satisfactory results. Any method which will substantially improve the results in this class is much to be desired, and such a method I believe that we possess in zinc ionisation. The apparatus required is simple, consisting of a galvanoset or some such source of current in which the ampèreage can be absolutely steadily increased and decreased, a short pencil of zinc as the positive electrode, a basin of water in which the patient's hand can be dipped as the negative electrode, and some weak sulphate of zinc to pour into the ear. Some otologists pass the zinc electrode into the ear through a vulcanite speculum with a special clip to prevent the electrode from slipping out. I find this, however, quite unnecessary; all one has to do is to wrap the zinc pencil in cotton-wool so as to prevent the metal from touching the skin.

The technique is simple: the ear must be cleansed and dried; the patient then lies down with the affected ear uppermost; the ear is filled with warm sulphate of zinc, 2 gr. to the oz.; the zinc electrode, wrapped in cotton-wool, is introduced into it; one hand is put into the basin of water with the negative electrode, and the current very slowly and steadily turned on, from zero up to one, two, or three M.A.'s, according to the tolerance of the patient, and still more slowly turned off after 10 to 15 minutes. The zinc sulphate lotion is then gently mopped out of the ear and a small pledget of cotton-wool put into the meatus.

In a recent case, with a perforation in the tympanic membrane large enough to admit of free access of the lotion to the inflamed area, one ionising is sometimes all that is required. For example:—

CASE 1.—Nurse E. had acute double otitis media following a severe cold, and was under treatment for five weeks. The right ear dried up but the left continued discharging pus. I ionised the left ear with zinc 3 M.A.'s for 10 minutes. Two days later the ear was quite comfortable, almost dry, quite dry after another two days, and since then has given no further trouble.

CASE 2.—Miss T. had acute earache lasting a few hours, relieved by bursting of drum with blood-stained serous discharge. Two days later I began dressing with ribbon gauze moistened with carbol-glycerine: five days later muco-purulent discharge continued. I then ionised the ear with zinc 1 M.A. five minutes. Next day the ear was dry, quite comfortable, and has given no further trouble.

In these cases the perforation was rather large, the discharge was not very profuse, and I had no reason to suppose that there was any involvement of bone.

On the other hand, ionisation cannot be expected to cure cases in which there is a very small perforation, or in which there is a very profuse, persistent discharge, indicating inflammation of the antrum and possibly mastoid cells, e.g.:—

CASE 3.—Mr. B., during convalescence from an attack of pneumonia, developed acute otitis media sinistra. I found a very profuse discharge, a rather small perforation in the membrane, slight mastoid tenderness. Operation was refused. Other treatments had little effect. I ionised the ear three times, but with no result whatever.

CASE 4.—Mr. J., during a cold had some pain in the left ear, which was relieved when a blood-stained serous discharge appeared. In his case the discharge was never profuse, but the perforation was very small; ionisation had no appreciable effect.

When suppurative otitis has become chronic, or when the bone cavity left by a mastoid operation has either refused to heal, or after healing has broken down again, ionisation will often effect a cure.

CASE 5.—Miss B. had a radical mastoid operation performed about 12 years ago. This healed and remained well till she was sent to France on war work. Then the mastoid broke down, and, in spite of treatment very thoroughly and carefully carried on, continued discharging for four years. She then came to me for ionisation. The cavity was healed after six sittings, and has remained dry and given no trouble since.

CASE 6.—Miss L., with a history similar to the last, required 12 sittings before the mastoid was finally dry. When I began treating her ear I ionised twice a week, which is probably too frequently, once a week being enough.

Some chronic cases do not yield to this treatment. Small perforations, the presence of granulation tissue, too profuse discharge are obvious difficulties that need hardly be mentioned; but a few cases that I thought ought to do well have not responded; I do not know why. I cannot claim to speak from a large experience, but my results in suitable cases have been so good that I feel justified in urging more otologists to adopt the treatment. I am, Sir, yours faithfully,

Brighton, Dec. 8th, 1921. ARTHUR J. HUTCHISON.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surgn. Lieuts. to be Surgn. Lieut.-Cmdrs.: R. P. Ninnis and J. D. Murphy.

ROYAL ARMY MEDICAL CORPS.

Capt. C. Helm retires, receiving a gratuity, and is granted the rank of Lt.-Col.

Capt. A. W. P. Todd retires, receiving a gratuity.

Capt. W. H. A. D. Sutton is restd. to the estabt.

Temp. Capt. R. O'Connor relinquishes his commn. and retains the rank of Capt.

TERRITORIAL ARMY.

Lt.-Col. D. L. Fisher resigns his commn. and retains the rank of Lt.-Col.

Capts. J. L. Brownridge, J. D. Wells, and R. M. Wilson to be Majs.

Capts. T. Rhind, J. O. Cuthbertson, P. B. Spurgin, and J. F. Molyneux, having attained the age limit, are retired and retain the rank of Capt.

TERRITORIAL ARMY RESERVE.

Capt. W. G. McKenzie, from R.A.M.C., General List, to be Capt.

ROYAL AIR FORCE.

Flight Lt. R. J. Monahan relinquishes his temporary commission on ceasing to be employed.

THE CALCUTTA CENSUS.—The municipal authorities have from the first doubted the accuracy of the results of the census taken in Calcutta. The increased demand for water, the extraordinary scarcity of housing accommodation and other broad facts all pointed to a large increase of population, and hence, when it was found that growing districts were reported to have lost in population, it seemed clear that someone had blundered. The chairman of the corporation, at the instance of the general committee, asked the census authorities for help in checking the census results in certain wards, and the proposed check has just been accomplished. Its outcome is to show that, as was suspected, the official enumeration was singularly defective. Immediately the census was over, dozens of persons reported that they had not been counted. It is now found that on the figures tested the omissions were between 12 and 15 per cent. Such a departure from the facts must falsify death-rates, birth-rates, and all municipal statistics. It seems inevitable that another census must be taken next March if municipal returns are to be useful as records. The low general death-rate of 31 recorded for the week ending Nov. 12th, the latest of which we have any record, is far below the five-year mean of 39·5, but the apparent diminution may be due in part to just such censal inaccuracy as has been shown.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An ordinary Council meeting was held on Dec. 8th, Sir Anthony Bowlby, President, being in the chair.—A report was read from the Court of Examiners respecting candidates found qualified for the diploma of Fellow. Diplomas of Fellowship were granted to 26 candidates.—A report was read from the Board of Examiners in Dental Surgery respecting candidates found qualified for the Licence in Dental Surgery. Licences in Dental Surgery were granted to 63 candidates.—Sir Anthony Bowlby and Sir John Bland-Sutton were re-elected representatives of the College on the Conjoint Board of Scientific Societies for the year 1922.—The President reported that he attended in the lecture theatre of the College on Thursday, Nov. 17th last, the day appointed for the annual meeting of Fellows and Members, and that, as the required quorum of 30 was not present at the expiration of 15 minutes from 3 P.M., the hour for which the meeting had been summoned, he had announced that the meeting could not be held. The President also referred to certain irregular proceedings which appear to have taken place on this occasion after his withdrawal from the theatre, and suggested that it might be a matter for the future consideration of the Council as to whether, or not, any steps should be taken in view of these irregular proceedings. It was thereupon referred to a committee to consider and report to the Council regarding the irregular proceedings to which the President had called attention.—A letter was read from Mr. H. Waring reporting the proceedings of the General Medical Council at their recent session, and the Council thanked Mr. Waring for his services as the representative of the College on the General Medical Council.

Of the 113 candidates who presented themselves at the recent examination for the Fellowship 26 were approved and 87 were rejected. The following are the names and medical schools of the successful candidates:—

Lyon H. Appleby, London Hosp.; Wilfrid H. Bleaden, Oxford and St. George's; Marian N. Bostock, Royal Free and St. George's; George A. Brookes, Sydney and London; George G. Bruce, Aberdeen and St. Bart.'s; Noel St.John G. Dudley Buxton, Univ. Coll.; Hugh W. B. Cairns, Adelaide and London; Robert C. Davenport, St. Bart.'s; Griffith I. Evans, Oxford and St. George's; Charles M. Finny, Dublin; Lionel B. Goldschmidt, King's Coll.; Ronald B. Green, Univ. Coll.; Alfred H. Heslop, Durham and St. Thomas's; Eric I. Lloyd, Cambridge and St. Bart.'s; Arthur J. McNair, Cambridge and Guy's; Victor E. Negus, King's Coll. and St. Mary's; Donald C. Norris, Paris and London; Eleanor J. Partridge, Royal Free; Robert Y. Paton, Cambridge and St. Mary's; Hugh Reid, Liverpool and London; Gilbert I. Strachan, Glasgow and London; Donald McKay Sutherland, Manchester; Maurice L. Treston, London; Austin D. Wall, St. Bart.'s; Alfred B. K. Watkins, London; and Leslie H. W. Williams, Cardiff and Univ. Coll.

Licences in Dental Surgery were conferred upon the following:—

Dorothy M.Allen, Royal Dental; H. C. Ardouin, Univ. Coll.; H. J. Barrand, T. E. Brevetor, J. H. Broadhead, and I. Broude, Guy's; J. B. Chenoy, Royal Dental; H. C. Churchill, P. N. C. Conway-Jones, F. W. Crook, J. L. de Kock, J. I. de Villiers, and D. I. du Buisson, Guy's; D. M. Edmonds, Royal Dental; F. J. Farmer, W. M. K. Gray, and A. W. Greenwood, Guy's; O. C. M. Haines, Royal Dental; F. J. Hagen, Univ. Coll.; A. W. Hall, Royal Dental; C. Hardwicke and A. Havenga, Guy's; F. Hiam, Royal Dental; F. R. Hogbin, Guy's; E. E. M. Horton, London; W. H. Hume, Royal Dental; Petronel Iago, Univ. Coll.; H. Jackson, Royal Dental; G. K. Jennings, B. J. M. Keyter, O. F. A. Krause, J. A. Krige, J. Lanchester, A. S. Landsler, S. Levinson, and H. J. Luck, Guy's; E. I. Morgan, London; W. J. Olivier, E. C. Packham, O. F. R. Painter, and H. H. Pickett, Guy's; C. L. T. Pocock, Royal Dental; E. M. Power, G. E. Price, and G. P. Pritchard, Guy's; L. Rabinowitz, London; S. H. Rands, H. J. Raubenheimer, and J. H. Reid, Guy's; B. A. Rilot, Royal Dental; P. M. Rohan, Univ. Coll.; F. H. Rowat, Royal Dental; A. F. Searle, London; W. E. Silver and J. S. Smith, Guy's; R. R. Steele, Royal Dental; F. W. van der Hoven, H. van Zyl, and H. E. Ward, Guy's; A. I. Williams, Royal Dental; and G. S. W. Willis, T. E. Withers, and F. Woodford, Guy's.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At the monthly meeting of the Faculty held on Dec. 5th the following were admitted, after examination, as Fellows of Faculty:—

Donald McIntyre, M.B., Ch.B., F.R.C.S. Edin.; Osborne Henry Mavor, M.B., Ch.B.; John Ivison Russell, M.B., Ch.B.; David Smith, M.B., Ch.B., M.D.; David Steven, M.D.; William Richard Wiseman, M.A., B.Sc., M.B., Ch.B.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—At the annual meeting of the College held on Dec. 1st Sir Robert Philip was elected President for the ensuing year. The other office-bearers for the year were appointed as follows: Vice-President, Dr. Harry Rainy; Councillors, Drs. John W. Ballantyne, John Macpherson, George M. Robertson, Robert Thin, and James Lamond Lackie; Treasurer, Dr. Norman Walker; Secretary, Dr. J. S. Fowler; Hon. Librarian, Dr. John William Ballantyne; Curator of the Research Laboratory, Dr. J. J. Graham Brown.

Sir E. Coey Bigger has been nominated a member for Ireland of the General Medical Council for a further period of five years from Jan. 24th, 1922.

UNIVERSITY OF MANCHESTER.—Prof. H. B. Dixon, F.R.S., who as successor to Sir Henry E. Roscoe has occupied for 35 years the Sir Samuel Hall Chair of Chemistry in Owens College, and later in the University of Manchester, has intimated to the Council and Senate of the University his intention to retire at the end of the present session. Prof. Dixon's special line of investigation has been the rate of explosion of gases, and for his work in connexion with the inspection of explosives during the war he was awarded the C.B.E. Prof. Dixon intends to continue his researches in the chemical department of the University.

The following appointments to the University of Manchester have been made: Mr. J. P. Buckley, lecturer in regional surgery; Mr. J. M. W. Morison, lecturer in applied anatomy; Dr. T. H. Oliver, lecturer in clinical medicine.

GLASGOW VICTORIA INFIRMARY.—At the annual general meeting of contributors to the Glasgow Victoria Infirmary on Dec. 1st, Mr. William Gray, the chairman, said that the daily number of cases now averaged 283. This was more than the present building could properly accommodate, but in view of the cost of building and the additional expenditure for maintenance involved, the governors hesitated to proceed with extensions. They had received substantial support from the public during the past year and the large increase in employees' subscriptions was most gratifying; if the scheme drawn up last year was universally adopted, he thought they might rely on a further increase from this source. The thirty-fourth annual report, recently issued, showed that during the year 4348 patients were treated, exclusive of 1917 cases of accidents and minor surgical ailments, and at the electrical department there were 9195 attendances. The cost per patient was £10 9*s.* 3*d.*, as against £10 4*s.* 3*d.* last year, and the cost per bed £160 14*s.* 5*d.*, compared with £159 9*s.* 2*d.* At Bellahouston Dispensary 24,560 patients were treated, and they had had to draw a sum of £1157 from the infirmary to meet expenses; and in the home at Largs, where 498 patients were treated, they had also had to draw on the infirmary funds. Including both legacies and special donations, they had an income of £60,295 this year, leaving a surplus over expenditure of £6356, which had been carried to capital, compared with a deficit of £1511 drawn from capital the previous year.

MAUDSLEY HOSPITAL COURSE FOR DIPLOMA OF PSYCHOLOGICAL MEDICINE.—The first part of the fourth course of lectures and practical courses of instruction for this diploma will begin on Jan. 3rd, 1922, at 2.30 P.M. Sir Frederick Mott, F.R.S., will give the first of eight lectures on the Anatomy of the Nervous System. He will also give practical instruction and demonstrations on methods of staining nervous tissue and preparing it for microscopical examination, on the living nerve cell and the nerve fibre, on degeneration and regeneration of nerves, and will distribute sections, illustrating the principal diseases of the nervous System, for mounting as a permanent collection. On Jan. 6th, at 2.30 P.M., Dr. F. Golla will give the first of eight lectures on the Physiology of the Nervous System, including practical instruction and demonstrations on physiological chemistry and practical physiology. On Jan. 5th, at 2.30 P.M., Dr. Henry Devine will give the first of eight lectures on Psychology, including practical instruction and demonstrations on sensation, psycho-physical methods, statistical methods, reaction times, association, memory, intelligence tests, muscular and mental work. The second part of the course will follow in April, 1922, and will include lectures and demonstrations on (1) The Diagnosis, Prognosis, and Treatment of Mental Diseases; (2) Mental Defect and Crime; (3) The Practical Aspect of Mental Deficiency; (4) Pathology of Mental Diseases, including Brain Syphilis, its Symptomatology and Treatment; (5) The Symptomatology of Mental Diseases; (6) The Psychoneuroses; (7) Demonstrations in Neurology. The fee for the whole course is £15 15*s.*, and for each part separately, £10 10*s.*; for one single series of lectures in Part I., £4 4*s.*; for one single series of lectures in Part II., £2 2*s.* The Fellowship of Medicine, 1 Wimpole-street, London, W., will collect fees from, and issue admission tickets to, medical men intending to take the course who are introduced by the Fellowship. Inquiries as to lectures, &c., should be addressed to the Director of the Pathological Laboratory, Maudsley Hospital, Denmark Hill, S.E.

LITERARY INTELLIGENCE.—Mr. Humphrey Milford announces the forthcoming publication of "The Records of the Augustinian Priory of St. Bartholomew, West Smithfield, and of the Church and Parish of St. Bartholomew the Great in the City of London," by E. A. Webb, F.S.A.

METROPOLITAN HOSPITAL SUNDAY FUND.—The annual meeting of the constituents of this fund will be held at the Mansion House on Monday, Dec. 19th, at 3 P.M. The business of the meeting is to receive the report of the Council for the year 1921, to elect the Council for the year 1922, and to determine the date of next Hospital Sunday.

CANCER HOSPITAL DINNER.—The Medical Committee of the Cancer Hospital entertained a number of guests to dinner at the Hotel Cecil on Dec. 8th. In proposing the health of the hospital, Sir Charles Ryall, the chairman, alluded to the finances of the hospital; in common with others they had been adversely affected by the war, but the foundations of the charity having been laid on a sound basis they were still able to carry on under the voluntary system. The clinical material at the Cancer Hospital, drawn from the immense population of London and the home counties, had recently attracted medical students from two of the London medical schools, and medical men, as house surgeons, from the Antipodes. Some of their best residents had come from New Zealand, and the hospital would always welcome the colonial who came to London, after graduating, to complete his medical education. The health of the guests was proposed by Sir Thomas Horder. Sir James Allen, High Commissioner for New Zealand, in replying, thanked the hospital for their care of the men from his colony, and alluded to the interest felt in New Zealand in the problems of cancer and tuberculosis. Sir Kingsley Wood, Parliamentary Secretary to the Ministry of Health, and Sir Percival Horton-Smith-Hartley, chairman of the medical committee of the Brompton Hospital, also spoke. Mr. Cecil Rowntree proposed the health of the chairman, expressing the warm admiration felt for him by his colleagues as a surgeon, counsellor, and friend.

TUBERCULOSIS IN DUBLIN.—Dr. P. J. Murray, the chief tuberculosis officer for Dublin, has recently issued his report for the year 1920. The most noteworthy feature in his report is the record of the regular and steady diminution in the mortality from tuberculosis in the past six years. In 1915 there were in the city 1543 deaths due to the disease, of which number 1193 were due to pulmonary tuberculosis. The numbers decreased every year until in 1920 they have fallen to 820 and 615 respectively. This may be regarded as something of an achievement in view of the fact that the present scheme for dealing with tuberculosis only came into being in 1913. The scheme at present embraces (1) a dispensary, (2) a sanatorium, and (3) a hospital for chronic or advanced cases. There are also arrangements for treating the various forms of surgical tuberculosis in the city hospitals, and subsequently, if necessary, in convalescent homes. Dr. Murray advises the provision of an institution for the treatment of children suffering from pulmonary tuberculosis. He is of opinion that the topographical and climatic conditions of Dublin have little influence on the incidence of the disease, which is much more affected by the conditions under which the poorer inhabitants are obliged to live. He has found domiciliary treatment less useful than institutional because of the deplorable housing conditions of so many of the working people, conditions which render any attempt at isolation nugatory. He notes that more than half of the new cases examined in 1920 were in families living in not more than one room to a family.

ROYAL INSTITUTION.—The following are the lecture arrangements at the Royal Institution before Easter: Prof. J. A. Fleming, six lectures adapted to a juvenile auditory on Electric Waves and Wireless Telephony, beginning on Thursday, Dec. 29th, with a lecture on Surface Waves on Liquids, and followed by lectures on Waves in Air, the Telephone, Electric Oscillations, Electric Waves, and Wireless Telephony. On Tuesday afternoons, commencing on Jan. 17th, 1922, there will be two lectures on Physiology as Applied to Agriculture, by Dr. F. H. A. Marshall; three by Prof. H. H. Turner on Variable Stars; five by Sir Arthur Keith on Anthropological Problems of the British Empire—Series I., Racial Problems in Asia and Australasia; and two by Dr. J. W. Evans on Earth Movements. On Thursday afternoons Mr. Seton Gordon will give two lectures on Mountain Birds of Scotland and Sea-Birds and Seals; Sir Napier Shaw two on Droughts and Floods; Prof. A. G. Perkin two on Dyeing, Ancient and Modern; Prof. H. Maxwell Lefroy two on the Menace of the Insect Pest: The Balance of Life in Relation to Insect Pest Control; Dr. P. Chalmers Mitchell two on the Cinema as a Zoological Method; and Prof. A. M. Hind two on Landscape Etchers: New and Old. On Saturdays there will be two lectures by Dr. L. de Selincourt on Humorists of the Seventeenth Century—I. Sir Thomas Browne, II. Thomas Fuller; two by Prof. E. A. Gardner on Masterpieces of Greek Sculpture; and six by Sir Ernest Rutherford on Radioactivity. The first Friday evening discourse will be given on Jan. 20th by Sir James Dewar on Soap Films and Molecular Forces. Succeeding discourses will probably be given by Viscount Burnham, Sir Francis Younghusband, Prof. W. D. Halliburton, Dr. R. S. Watson, Prof. J. Joly, Dr. C. M. Wenyon, Prof. T. R. Merton, Dr. A. P. Laurie, Prof. F. G. Donnan, Mr. A. B. Walkley, Sir Ernest Rutherford, and other gentlemen.

THE LATE DR. MATTHEW OWEN COLEMAN.—The death is recorded of Dr. M. O. Coleman, who had been medical officer of health for Surbiton for 45 years, at the age of 76. Dr. Coleman qualified M.R.C.S. Eng. in 1867 from Guy's Hospital, taking his M.B. Aberdeen in 1868 and M.D. Aberdeen in 1871. He became interested in public health early in his career, and in addition to a large private practice undertook the duties of an M.O.H., taking his D.P.H. in 1893. Dr. Coleman was very popular in the district he had served so long, and his death will bring grief to many colleagues and old friends.

WELSH NATIONAL SCHOOL OF MEDICINE.—This school is now making a public appeal for a capital sum of £100,000 for the purposes of endowment and further equipment. This is necessary in order to place the institution in a position to qualify for certain Treasury grants which are subject to the conditions being complied with before August, 1922. The promised grant of £5000 per annum will be forthcoming only in the event of the school raising by public subscription an equivalent annual income, or, in the alternative, a capital sum that will yield this revenue. The time is short and the matter is of great urgency. The Prime Minister has signed an appeal in which he sets forth the aims of the school, pointing out that to enable the school to give a complete training in all branches of medicine and surgery on this system will require a yearly expenditure of at least £25,000, to meet which the grants available from public sources and fees will be quite inadequate. A new physiological block and a department of public health are being built, and chairs of preventive medicine and tuberculosis have been founded. Further expenditure on equipment in the shape of laboratories and apparatus is necessary, and an endowment fund is required to provide the full complement of professors, lecturers, and trained staff which the hospital unit system requires. Mr. Lloyd George adds that the King Edward VII. Hospital at Cardiff has placed all its beds at the disposal of the school for tuition purposes, and that nothing except money is now needed to make this one of the foremost schools of medicine in the country. Donations should be sent to the organising secretary, Mr. Gwilym Hughes, at the National School of Medicine, Newport-road, Cardiff.

THE LATE DR. THOMAS MACQUEEN.—Dr. Thomas MacQueen, who died suddenly at Eastbourne on Dec. 1st, had been in poor health. He underwent a severe operation about ten years ago, but he was able to continue in practice until the end of his life. Dr. MacQueen took the M.B. degree at the University of Edinburgh in 1873 and became M.S. the same year; he held house appointments at the Queen's Hospital, Birmingham, and at the Royal Hospital for Diseases of Children in Edinburgh. During the Russo-Turkish war of 1877–8 he acted as surgeon to the Stafford House Society, and later settled at Eastbourne. Highly respected by everyone with whom he came in contact, he soon had an extensive practice. For many years he was on the medical staff of the Princess Alice Hospital, and as a prominent member of the Hartington Lodge of Freemasons he was Master in 1886 and received Provincial honours in 1893. He was 70 years of age, and leaves a widow, son (Dr. R. C. MacQueen), and daughter to mourn their loss.

Dr. W. Muir Smith, of Eastbourne, writes of Dr. MacQueen: "By his death the local medical profession in Eastbourne has lost one of its oldest and most respected members, and the town one of its most esteemed citizens. In 1879 he settled in Eastbourne, joining the late Dr. G. Mundie and Dr. H. Habgood in an extensive general practice, which was only dissolved in 1917 when Dr. Habgood retired from practice. He took a keen interest in the municipal and social affairs of the town, serving for three years on the town council, when he rendered excellent service on the sanitary committee. After a serious operation in 1910 Dr. MacQueen never recovered his former vigour although he continued, with the assistance of his son, who in 1919 joined him in partnership, to pursue some of his professional activities. His death will be poignantly lamented by many in the humbler walks of life, who had come to regard his assiduous care and ready sympathy with feelings akin to reverence. He leaves nothing but friends behind."

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Dec. 20th.

GENERAL MEETING OF FELLOWS: at 5 P.M.
Ballot for Election to the Fellowship. (Names already circulated.)

Wednesday, Dec. 21st.

HISTORY OF MEDICINE: at 5 P.M.
Papers: Mr. C. J. S. Thompson: The Parturition Chairs, their History and Use. Miss Eileen Power: An English Woman Doctor in the Fifteenth Century.

OBSTETRICS AND GYNÆCOLOGY.
Members of this Section are specially invited to attend the Meeting of the History Section announced above.

LONDON DERMATOLOGICAL SOCIETY, 49, Leicester-square, W.C.
TUESDAY, Dec. 20th.—4.30 P.M., Pathological Specimens. Cases sent for Consultation. Clinical Cases. 5 P.M., Address by Dr. Harry Campbell: The Disorders of the Cutaneous Circulation. 7 P.M., Fellows' Monthly Dinner. Cavour Restaurant, Leicester-square. Tickets 6*s.* 6*d.* each. Dr. Mitchell, 33, Weymouth-street, W., should be notified at or before the Society's Meeting.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, Dec. 19th.—2 P.M., Mr. Addison: Visit to Surgical Wards.
TUESDAY.—2 P.M., Dr. Pernet: Skin Department.
WEDNESDAY.—10 A.M., Mr. MacDonald: Genito-Urinary Department.
THURSDAY.—2 P.M., Mr. Bishop Harman: Eye Department.
FRIDAY.—2.30 P.M., Dr. Pritchard: Visit to Medical Wards.
SATURDAY.—10 A.M., Dr. Arthur Saunders: Medical Diseases of Children.
Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
TUESDAY, Dec. 20th.—4.30 P.M., Mr. J. P. Buckley: Vague Abdominal Symptoms.

Appointments.

CORNELIUS, J. T., has been appointed Assistant Professor of Hygiene at the Provincial Institute of Hygiene and Sanitation, Lucknow.

MACLEAN, EWEN J., M.D., C.M. Edin., M.R.C.P. Lond., Professor of Obstetrics and Gynæcology in the University of Wales in connexion with the Welsh National School of Medicine, Cardiff.

ORD, J. W. E., M.D., C.M. McGill, Certifying Surgeon under the Factory and Workshop Acts for Eyam.

WALKER, K. M., F.R.C.S. Eng., Surgeon with charge of Out-patients, Great Northern Central Hospital.

Hampstead General Hospital: SEMON, H. C., M.D., B.Ch. Oxon., Dermatologist; BOOTH, L. H., M.B., Ch.B. Dunedin, N.Z., House Surgeon: FANNING, J., M.B., B.S. Lond., House Physician: WARDE, MILDRED, M.R.C.S., L.R.C.P. Lond., Casualty Medical Officer: COLLIE, ALISON MARGARET, M.B., M.R.C.S., L.R.C.P. Lond., Casualty Surgical Officer.

The Queen's Hospital for Children, Hackney-road: RUSSELL, H. B., B.Ch. Camb., F.R.C.S. Eng., and BRAITHWAITE, J. V. C., M.B., B.S. Lond., Assistant Physicians.

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne District Infirmary.—H.S. £200.
Barry Accident and Surgical Hospital.—S. £750.
Bath, Winsley Sanatorium.—Asst. Res. M.O. £250.
Bedford County Hospital.—Asst. H.S. £150.
Birmingham, Ministry of Pensions, Orthopædic Centre.—Res. Surg. O. £300.
Birmingham, Queen's Hospital.—Obst. and Ophth. H.S. and Cas. H.S. Each £90.
Birmingham, Rubery Hill and Hollymoor Mental Hospital.—Jun. Asst. M.O. £400.
Blackburn County Borough.—Asst. M.O.H. £600.
Brighton, Royal Sussex County Hospital.—Hon. P. and Hon. Asst. P.
Bristol Royal Infirmary.—H.P. and H.S. £120 each.
Bury Infirmary.—Jun. H.S. £150.
Bury St. Edmunds, West Suffolk General Hosp.—Res. H.S. £200.
Cambridge, Addenbrooke's Hospital.—H.S. £130.
Cape Town University.—Tech. Asst. in Surgery. £350.
Chester, Cheshire County Council.—Dist. Tub. O. £600.
City of London Hospital for Diseases of the Chest, Victoria Park.—Res. M.O. £250.
Derbyshire County Council.—Sanat. Supt. £700.
Dorchester, Dorset County Council.—Asst. M.O. £500.
Dover Borough.—Asst. M.O.H. £750.
Dover Royal Victoria Hospital.—H.S. £180.
East Ham County Borough Education Committee.—Asst. Sch. M.O. £500.
Exeter, Royal Devon and Exeter Hospital.—Sen. H.S. £250. Asst. H.S. £150.
Great Northern Central Hospital, Holloway-road, N.—Res. M.O. £250.
Hospital for Diseases of Throat, Golden-square.—Hon. Asst. S.
Hospital for Sick Children, Great Ormond-street.—Cas. O. £400.
Inverness Northern Infirmary.—H.S. £150.
Johannesburg, University College.—Sen. Lect. in Anat. £516.
Leeds Hospital for Infectious Diseases, Seacroft.—Second Asst. M.O. £250.
Leeds Public Dispensary.—Sen. Res. M.O. £250.
Lincoln, Bracebridge Mental Hospital.—Med. Supt. £750.
London Homœopathic Hospital, Bloomsbury.—M.O. for X ray Dep.
London Lock Hospital, 91, Dean-street.—Clin. Assts.
Macclesfield General Infirmary.—Sen. H.S. £200.
Manchester, Baguley Sanatorium.—Med. Supt. £500.
Manchester Royal Infirmary.—Asst. M.O. £35.
National Hospital for Diseases of Heart, Westmoreland-street.—Res. M.O. £150.
Putney Hospital.—Hon. Surg.
Royal College of Physicians, Pall Mall.—Milroy Lect.
Royal Free Hospital, Gray's Inn-road.—H.P. £50.
Royal Naval Medical Service.—Surg. Lieuts.
Royal Waterloo Hospital for Children and Women, Waterloo-road. Radiographer. £100.
Russian Famine Friends' Relief Committee.—Doctors wanted.
St. Bartholomew's Hospital.—Asst. Aural S.
St. George's Hospital, S.W.—Res. H.P.'s and H.S. Each £50.
St. Pancras Metropolitan Borough.—Tuberc. O. £818 18*s.*
Sheffield Royal Infirmary.—Cas. O. £150.
Shrewsbury, Royal Salop Infirmary.—H.S. £275.
Southport General Infirmary.—Jun. H.S. £175.
Staffordshire General Infirmary.—H.S. £250.
Ventnor, Royal National Hospital for Consumption.—Asst. Res. M.O. £300.
West London Hospital, Hammersmith-road.—Two H.P.'s and one H.S. Each £100.
Winchester, Royal Hampshire County Hospital.—H.S. £150.
Windsor, King Edward VII. Hospital.—Asst. in X ray Dept.

The Secretary of State for the Home Department, S.W., gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for County Court Circuit No. 49, attached more particularly to the Margate and Ramsgate County Courts. Applications should reach the Private Secretary, Home Office, S.W., not later than the 28th December.

Births, Marriages, and Deaths.

BIRTHS.

CRIPPS.—On Dec. 7th, at Lower Seymour-street, W., the wife of W. Lawrence Cripps, F.R.C.S., of a son.

EDWARDS.—On Dec. 11th, at Camberwell House, the wife of Dr. Francis Edwards, of a son.

RANKIN.—On Dec. 9th, at Harley-street, the wife of Nicol M. Rankin, M.C., M.B., Ch.B., of a son.

VINCENT.—On Dec. 5th, at Old Court, Ealing, to Dr. and Mrs. L. J. Vincent, 6, Twyford-crescent, Acton—a son.

MARRIAGES.

DRIBERG—CARTER.—On Dec. 2nd, at St. Marylebone Parish Church, James D. Driberg, O.B.E., M.C., F.R.C.S., Queen Anne-street, to Dorothy Unwin Carter, daughter of the Rev. Arthur and Mrs. Carter, of Thrussington, Leicester.

LINDSAY—DAVIS.—On Dec. 3rd, at St. John's Church, Ladbroke-grove, E. Charles Lindsay, C.B.E., F.R.C.S., to Mrs. M. C. Davis, of Undercliff, St. Margaret's Bay.

REES—HEMINGWAY.—On Dec. 15th, at Regent-square Presbyterian Church, London, by the father of the bridegroom, assisted by Rev. Herbert Gray, John Rawlings Rees, M.D., of 146, Harley-street, third son of Rev. R. M. Rees, M.A., and Mrs. Rees, of Epping, to Mary Isabel Hemingway, M.B., Ch.B., second daughter of Charles R. Hemingway, J.P., C.B.E., of Penrhyn House, The Park, Nottingham.

DEATHS.

COLEMAN.—On Dec. 11th, at Dunedin, Surbiton, Matthew Owen Coleman, M.D., D.P.H., aged 77 years.

DILWORTH.—On Dec. 4th, after a short illness, Timothy Francis Moya Dilworth, M.B., M.Ch., B.A.O. N.U.I., Senior Demonstrator of Anatomy at St. Thomas's Hospital, aged 28 years.

FROST.—On Dec. 10th, Edmund Frost, M.D., of Chesterfield Meads, Eastbourne, aged 64 years.

PALMER.—On Dec. 7th, at Oakley-street, S.W., after a short illness, James Foster Palmer, M.R.C.S., L.R.C.P., aged 73 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE DOCTRINE OF INFECTION THROUGH THE AGES.

THE last Chadwick lecture of the present session was delivered at the Barnes Hall of the Royal Society of Medicine on Dec. 8th, Sir James Crichton Browne presiding, by Dr. Charles Singer, who discussed the history of the doctrine of infection.

In Prehistoric and Classical Times.

In modern times, Dr. Singer said, a mother suspecting her child to be suffering from measles would promptly call in a physician, who might confirm her suspicions, informing her at the same time that the child had contracted the disease from a schoolfellow whom the physician had been attending for some days. Two thousand years ago the family friend and physician would have assured the Roman mother that the atmosphere was in a pestilential state, that in time this pestilential character of the atmosphere would pass away and that in a few days perhaps the patient would recover. In a lake village of, say, 10,000 years ago, modern views might have prevailed; not only would an infection be considered to be conveyed from one person to another, but other things, such as a broken arm, would be attributed to the same cause, the idea of infection having a much wider meaning. Good luck was infectious, virtue and vice every form of happiness and unhappiness.

Why the ancients of classical times did not believe in infection in the wide sense, while the primitive people believed everything to be infectious, had its root-cause, Dr. Singer said, in each case in the group of philosophical ideas formed regarding the nature of the world in which they lived. By a process of sympathetic magic early man considered that moral qualities and powers passed from person to person in the same way as physical attributes were conveyed from object to object. Early sanitary legislation was based on this doctrine of sympathy. Classical writers, on the other hand, held a rationalistic attitude towards phenomena in general and disease in particular. The element of infection was thrown into the background and emphasis was laid rather on the atmospheric element or miasma. Galen regarded most epidemic diseases as due to changes in the only universally acting medium, as he considered, the air; to him, few diseases were conveyed from person to person, among these few, be it noted, was phthisis. Infection from person to person remained mainly the layman's view, beginning with Thucydides and handed on through the dark ages by St. Isidore, who died in 636 A.D. During the scholastic period which in medicine extended from the twelfth to the middle of the sixteenth century, the prevalent medical teaching was derived from works translated from the Arabic, although few, if any, of the writers were Arabs, the doctrines propounded being derived from and essentially similar to those of the classical writers. Arabian medical authors, however, laid more emphasis on the passage of disease from person to person than did the Greek physicians. After this came the fatalistic reaction when the sale of medical books was forbidden, and many of them were destroyed, Galen's works fortunately escaping destruction.

In the Middle Ages.

Western Europe, Dr. Singer continued, between the Black Death of 1347–49 and the middle of the sixteenth century was swept by an appalling series of epidemic outbreaks of plague, typhus, influenza, small-pox, syphilis, and sweating sickness, which gave rise to a considerable literature, at first mainly of Arabian origin. From 1490 to 1550 this literature came under the influence of rationalistic Renaissance philosophy, from which the modern doctrine of infection took its rise. Hieronymo Fracastor might be called the father of epidemiology; he invented the word syphilis and was one of the earliest to describe that disease. His great work "De Contagionibus" was published at Venice in 1543. He regarded infection as the result of small seeds or semina, so minute as to escape the sense of vision, but having the power of multiplication. These seeds were specific for each infectious disease, they could arise de novo as the result of atmospheric disturbance or of corruptions and especially of certain astral influences. It was useless, said the lecturer, to discuss whether Fracastor considered the semina living or not, for he made no distinction between living and non-living matter, belonging as he did to a philosophical school which held all material substance to be pervaded by some sort of living principle. He made, however, a close and pregnant comparison between infection, putrefaction, and fermentation. Fracastor's views were widely accepted in the sixteenth and seventeenth centuries being amplified by such writers as Paracelsus, Jerome Carden, and Gabriel Fallopius, but remaining for the most part the current explanation of the phenomena of infectious and epidemic disease.

CALENDARS AND DIARIES FOR 1922.

THE Anglo-French Drug Co., Ltd., of 238a, Gray's Inn-road, London, W.C., have issued their diary for 1922 made in the handy form of a block calendar with a page 6 by 4½ inches for each day, containing ample space for memoranda. The diary is intended to lie on the desk and is provided with a cover containing a window permitting the date always to remain in sight. It can be obtained free on application.

EPILEPTIC FITS AND ATMOSPHERIC POTENTIAL.

IN a paper presented to the Balneological Section of the Royal Society of Medicine on Dec. 8th Dr. A. G. S. Mahomed compared the published records of atmospheric electrical potential from Kew Observatory with the number of epileptic fits recorded day by day among the inmates of Epsom Colony and Caterham Mental Hospital. The periods chosen for comparison were the first half-years of 1912 and 1919. Dr. Mahomed found potential and fits started high in January, were about at the average level in April, and sank below it in the succeeding months. June did not agree with the rule. The observations are suggestive, although Dr. Mahomed has not worked out mathematically the actual correlation value.

HOSPITALS AND DISPENSARIES IN BENGAL.

IT is well known, as remarked by Major-General W. H. B. Robinson, C.B., K.H.S., I.M.S., Surgeon-General with the Government of Bengal, in his report on Hospitals and Dispensaries for the years 1917–18–19 (Calcutta, 1920) that there is need for more qualified practitioners "of the Licentiate or School Standard" in that province; and in order to meet this demand the sanctioned strength of students in the Campbell and Dacca Medical Schools has been increased to 500 and 400 respectively. Moreover, a new medical school, especially for western Bengal, with accommodation for 200 students, is in course of construction at Burdwan, and is expected to be opened in the present year; also the Carmichael Medical College at Belgachia, together with the Albert Victor Hospital attached to it, are both being enlarged and improved. The School of Tropical Medicine at Calcutta was completed four years ago, but has not yet been opened; the buildings are now being extended to include laboratories, &c., for the teaching of hygiene. The total hospital accommodation in Calcutta at present amounts to 2385 beds in 16 hospitals, as compared with 2323 beds in 14 hospitals at the end of 1916; but all these institutions are more or less overcrowded, a considerable number of beds having to be given up to incurables and permanent cripples. There is urgent need for a suitable refuge for these cases, as well as for a convalescent home to relieve the pressure on the very costly hospital beds. The average number of patients treated per annum in these Calcutta hospitals was 446,209, compared with a similar average of 397,074 in the preceding triennium, the increase being due partly to prevalence of influenza and small-pox; out of this average annual total the in-patients numbered 32,325, with a death-rate of 14·49 per cent. At the Campbell Hospital as many as 11,873 patients were treated, a very large increase on the admissions for 1918 (7250), and 1917 (5575). Great credit is due to the superintendent, Lieut.-Colonel A. Leventon, for his success in meeting the enormous demands on the accommodation at his disposal. This hospital is now "highly popular among the middle and humbler classes," and a much needed enlargement has been taken in hand.

Among the chief diseases prevalent during the three years reported on were influenza in 1918 and 1919, cholera in each year, kala-azar, and tubercle of the lung. Admissions for malaria, pulmonary tubercle, and venereal diseases were less numerous in Calcutta in 1917 and 1918 than in 1916. The death-rates in cholera among in-patients were 22·6, 24·5, and 28·1 per cent. for the three years, 1917–18–19, respectively, "a very high testimonial to the Rogers treatment by intravenous saline, especially when one considers the very critical condition of the cases on admission." In the districts there was an increase in malaria (more than one-third of the total patients attending dispensaries being under treatment for this disease). Injection of quinine salts gave satisfactory results. Surgeon-General Robinson, in his concluding remarks, gives a well-deserved tribute to the excellent work of the medical officers of the Indian Medical Service and of the military and civil assistant surgeons, and draws attention to the inadequacy of pay in the case of the two latter. This matter has been long under consideration, and it is hoped that improvements will be effected without further delay.

PLANT RESPONSE TO INJURY.

AT a meeting of the Association of Economic Biologists, held on Dec. 9th in the Botanical Lecture Theatre of the Imperial College of Science, South Kensington, Sir David Prain presided over a discussion on the Resistance of Normal and Injured Plant Surfaces to the Entry of Pathogenic Organisms. Prof. J. H. Priestley, of Leeds, who opened the discussion, pointed out the important bearing of certain research work now being carried out in his laboratory. He described the structural features of the normal plant which opposed the entry of pathogenic organisms and the chemical response made by the plant tissue to injury. The surface of a cut potato tuber within a short time of injury became covered by a layer of "suberin" arising from the oxidation and condensation of fatty substances mainly carried to the cut surface by the sap. Similar deposits might be traced in the normal tissues of root, stem, and cuticle. Suberisation took place just below the cut surface, the depth varying with the conditions and the nature of the plant. In the potato the fatty substances appeared to come from the greater part of the tissue and to be carried to the surface by vascular strands. At a later stage a meristem arose beneath the blocked surface and gave rise to cork tissue running across the wounded surface. A study of the conditions under which cork was formed might, Prof. Priestley concluded, throw light upon many problems relating to injury of tissues.

ARMENIAN REFUGEES (LORD MAYOR'S) FUND.

To the Editor of THE LANCET.

SIR,—I am anxious to obtain the greatest possible support for the appeal being made this Christmas-time by the Armenian Refugees (Lord Mayor's) Fund, of which I am President. While other nationalities are enjoying opportunities for recovery and reconstruction after the war, the Armenian nation has none. At no time in her history has her need been greater. Owing to Turkish invasion the Armenian Republic of Erivan was unable to sow in time for a harvest and famine is already widespread. It is calculated that 180,000 children, many of them orphans, and 120,000 adults, are already on the verge of starvation, and by the end of January there will be no foodstuffs available except those provided by relief agencies. In addition to this vital emergency work, the Fund is responsible for an orphanage of some 600 children near Constantinople, and has felt obliged a few days ago to offer to undertake the care of 300 more. These are the purposes for which I appeal most earnestly to the public. Donations should be sent to the Hon. Treasurer, Lord Mayor's Fund, 96, Victoria-street, S.W. 1.—I am, Sir, yours faithfully,

JOHN BADDELEY,
Mansion House, E.C., Dec. 8th. Lord Mayor of London.

YEAR-BOOKS.

THE thirtieth edition of the *Annual Charities Register and Digest* (London: Longmans, Green and Co., for the Charity Organisation Society, pp. 599+xx., 7*s.* 6*d.*) is described on the title-page as "a classified register of charities in or available for the metropolis," but presumably this description is only intended to indicate that the information concerning London charities is practically exhaustive, whereas that which concerns provincial, Scots, Irish, colonial, and foreign institutions is less detailed; indeed, it is pointed out at the commencement of the colonial and foreign list that owing to existing circumstances it has been found impossible to revise the Continental list. The financial review of the year, with which the volume opens, bears witness to the magnitude of the task of preparation and the difficulties involved in assembling statistics at once simple and comprehensive; for instance, the impossibility of separating London and provincial charities is evidenced in the case of Dr. Barnado's Homes among other institutions; and there are important establishments—e.g., many of those supervised by the Roman Catholic Church, and some Anglican sisterhoods—to which considerable sums are contributed, but which do not furnish statistics in the same way as do purely secular institutions. The review of the year is divided into eight sections: the first comprises details of the London Charity Organisation Society, a list of societies throughout the United Kingdom which correspond with that society, and the foreign and colonial list already referred to. The sections devoted to Relief in Affliction, in Sickness, in Distress (permanent and temporary), and Reformatory Relief, suggest the contents by their titles; a miscellaneous section includes information concerning social and physical improvement, emigration, &c., and one section is devoted to Spiritual Institutions. Useful appendices deal with benevolent institutions, friendly and trade societies, registry offices attached to charitable institutions, metropolitan labour exchanges, and guilds of help, and provide other information difficult to obtain elsewhere.

The publishers of the *Official Year-Book of the Scientific and Learned Societies* (London: Charles Griffin and Co., 1921, pp. 366) state that this thirty-eighth annual volume retains all the valuable features of previous issues, and that every effort has been made to maintain a high degree of accuracy. The book is a record of the work done in science, literature, and art during the session 1920–21 by numerous societies and Government institutions, and since it is compiled from official sources the information is in the main accurate and comprehensive. We note among minor errors that the name of the president of the Harveian Society is wrongly spelt, and that the list of papers stated to have been read between October, 1920, and March, 1921, at St. Mary's Hospital Medical Society is actually the programme for the current session 1921–22. The volume is well arranged, of small bulk, and has a good index.

The *Girls' School Year-Book* (*Public Schools*) (London: H. F. W. Deane and Sons, The Year-Book Press, Ltd., 1921, pp. 574, 7*s.* 6*d.*) is issued as the official book of reference of the Association of Head Mistresses. The greater part of the book is taken up with a list of the public secondary schools for girls, with details of personnel of governing body and staff, fees, special features, and so forth. Part II. deals mainly with the future careers of girls leaving school. Those contemplating medicine as a career will find condensed into two pages an admirable summary of the points to be considered in the choice of a medical school and of a degree or diploma, of the prospects offered to women entering the medical profession, and other practical suggestions. The list of metropolitan medical schools open to women is incomplete.

TRAVELLING PUBLIC HEALTH INSTITUTES.

IN an annotation in our issue of Dec. 10th attention was drawn to the new schools of public health recently endowed at Johns Hopkins and Harvard Universities. One of the most successful activities of the first of these schools during the winter of 1920 was a special six weeks' course of instruction for public health workers and officials, which was largely attended by medical and sanitary officers from many States within the union, as well as by others from Canada and Central and South America. The need for short intensive courses of instruction for public health workers is evidently being more fully realised; and we have before us the preliminary announcement of a series of "Public Health Institutes" which are being organised in 21 cities in various States by the United States Public Health Service. These institutes are one-week schools, at which addresses and demonstrations of special types of public health work are given. The syllabus of these courses is ambitious, embracing some 57 lectures on 15 subjects, though obviously selection will be made in different areas. The New Orleans Institute, which begins on Jan. 9th, will include the following courses: tuberculosis, nutrition in health and disease, general communicable diseases, industrial hygiene, administrative problems, medical social work, protective social work, child hygiene, the management of clinics and health centres, non-communicable diseases, sanitary engineering, mental hygiene, the delinquent, syphilis, and gonorrhœa. Did we not know the marvellous assimilative power of Americans for lectures, the carrying out of such a syllabus might be expected to cause acute mental dyspepsia; but in that country this result need not be feared. The general result of these courses of instruction will be to increase local interest in public health problems, to stimulate the discouraged workers, and to secure valuable interchange of thought and experience between teachers and students and between individual workers. The courses, as is carefully pointed out in the prospectus, cannot take the place of more detailed training for public health work. They will, however, point to the importance of such training, and stimulate attendance at the schools where it is given. The experiment is one to be watched with interest, for its own sake as for its bearing on possibilities of similar courses in this country.

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